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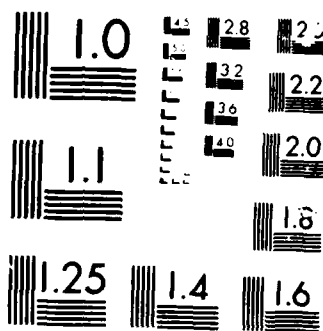
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NINTH AMERICAN PEPTIDE SYMPOSIUM
JUNE 23-28, 1985

FINAL REPORT

KENNETH D. KOPPLE

JUNE 30, 1986

Supported by

U.S. ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND
Fort Detrick, Frederick, Maryland 21701-5012

Grant No. DAMD17-85-G-5039

Illinois Institute of Technology
Chicago, Illinois 60616

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06	03				
07	03				
19. ABSTRACT (Continue on reverse if necessary and identify by block number) The Ninth American Peptide Symposium was held on the campus of the University of Toronto June 23-28, 1985. There were 685 registrants at the meeting, which dealt with the Chemistry and Biology of Peptides. The scientific record of the meeting is incorporated in the book of Abstracts, the meeting Program, and the published proceedings volume, <u>Peptides, Structure and Function, Proceedings of the Ninth American Peptide Symposium</u> , C.M. Deber, V.J. Hruby and K.D. Kopple editors, published by Pierce Chemical Co., Rockford, IL, 1985. About 370 papers were submitted as abstracts. Over 250 were accepted for presentation at one of the two two-day poster sections, and 40 more were presented as 10-minute talks. In addition there were 15 invited 25-minute talks and 8 speakers at two minisymposium sessions. Papers published in the proceedings volume totaled 209.					
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FINAL REPORT

NINTH AMERICAN PEPTIDE SYMPOSIUM JUNE 23-28, 1985, TORONTO, ONTARIO, CANADA

The Ninth American Peptide Symposium, an open scientific meeting dealing with the Chemistry and Biology of Peptides, was held, as planned, on the Campus of the University of Toronto. June 23-28, 1985. Partial support of this meeting was provided by a grant from the U.S. Army Medical Research and Development Command, Fort Detrick, under Grant No. DAMD17-85-G-5039.

The scientific record of the Ninth American Peptide Symposium is incorporated in the book of Abstracts, the meeting Program, and the published proceedings volume, Peptides, Structure and Function, Proceedings of the Ninth American Peptide Symposium, C.M. Deber, V.J. Hruby and K.D. Kopple, editors, published by Pierce Chemical Co., Rockford, IL, 1985.

As the formal scientific report for Grant DAMD17-85-G-5039, 17 copies of the published proceedings volume were distributed as required by the grant document, separately from this report in April, 1986, to:

Commander
U.S. Army Medical Research and Development Command
4 copies ATTN: SGRD-RMS
12 copies ATTN: SGRD-PLA

Commander
U.S. Army Medical Research Acquisition Activity
1 copy ATTN: SGRD-RMA-RC

Attached as Appendix A to this report is the printed Program of the Symposium, which contains the titles of all papers, the names and affiliations of the authors, and the names of members of the Program Committee.

The Ninth American Peptide Symposium was attended by 664 regularly registered participants. Those participating represented about 25 nations. There were 445 scientists from the U.S., 55 from Canada, and more than 20 each from the United Kingdom, France, Japan and West Germany.

Over 370 papers were submitted to the Program Committee. More than 250 were accepted for presentation at poster sessions, and 40 were presented as 10-minute talks. In addition, there were 14 invited 25-minute talks, one award address, and 8 additional speakers at two minisymposium sessions. A total of 209 of the papers given at the meeting were published in the proceedings volume.

Appendix A: Program, Ninth American Peptide Symposium

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NINTH AMERICAN PEPTIDE SYMPOSIUM

PROGRAM

University of Toronto,
Toronto, Ontario, Canada

June 23-28, 1985

NINTH AMERICAN PEPTIDE SYMPOSIUM

University of Toronto,
Toronto, Ontario, Canada

June 23-28, 1985

CO-CHAIRMEN:

Dr. Charles M. Deber
Research Institute
The Hospital for Sick Children
Toronto, Ontario
Canada, M5G 1X8

Dr. Kenneth D. Kopple
Department of Chemistry
Illinois Institute of Technology
Chicago, Illinois 60616

NINTH AMERICAN PEPTIDE SYMPOSIUM

PLANNING COMMITTEE

Charles M. Deber, *University of Toronto*
 Lila M. Gierasch, *University of Delaware*
 Victor J. Hruby, *University of Arizona*
 Kenneth D. Kopple, *Illinois Institute of Technology*
 Garland R. Marshall, *Washington University, St. Louis*
 Miguel A. Ondetti, *Squibb Research Laboratories*
 Daniel H. Rich, *University of Wisconsin*
 Jean E. Rivier, *The Salk Institute*
 Michael Rosenblatt, *Merck Sharp and Dohme Research Labs*
 Peter W. Schiller, *Clinical Research Institute of Montreal*
 Clark W. Smith, *The Upjohn Company*
 John M. Stewart, *University of Colorado*
 Daniel F. Veber, *Merck Sharp and Dohme Research Labs*

PROGRAM COMMITTEE

Michael J. Brownstein, *National Institutes of Health*
 Charles M. Deber, *University of Toronto*
 Bruce W. Erickson, *Rockefeller University*
 Victor J. Hruby, *University of Arizona*
 Kenneth D. Kopple, *Illinois Institute of Technology*
 Danute E. Nitecki, *Cetus Corporation*
 Jean E. Rivier, *The Salk Institute*
 Peter W. Schiller, *Clinical Research Institute of Montreal*
 Daniel F. Veber, *Merck Sharp and Dohme Research Labs*

Monday, June 24, 1985

MORNING

- | | |
|-------|--|
| 7:30 | REGISTRATION
Medical Sciences Building, Main Auditorium |
| 8:30 | WELCOMING REMARKS:
Charles M. Deber ,
<i>University of Toronto, Toronto, Ontario, Canada;</i>
<i>Co-Chairman, Ninth American Peptide Symposium</i>
George E. Connell ,
<i>President, University of Toronto</i> |
| | ANTIGENIC SITES AND IMMUNOPEPTIDES
<i>Session Chair: Bruce W. Erickson,</i>
<i>The Rockefeller University, New York, NY, USA</i> |
| 8:45 | ALGORITHMIC IDENTIFICATION OF ANTIGENIC DETERMINANTS IN PROTEINS OF KNOWN STRUCTURE (L-Mon-1)
David W. Fanning , John A. Smith and George D. Rose
<i>Pennsylvania State University, Hershey, PA, and Massachusetts General Hospital and Harvard Medical School, Boston, MA, USA</i> |
| 9:15 | EPITOPE MAPPING OF BIOLOGICALLY ACTIVE REGIONS OF HERPES SIMPLEX VIRUS GLYCOPROTEIN D (L-Mon-2)
G.H. Cohen , D. Long, M. Ponce de Leon, V. Rinaldi and R.J. Eisenberg
<i>University of Pennsylvania, Philadelphia, PA, USA</i> |
| 9:45 | ENHANCEMENT OF IMMUNE RESPONSE USING B-LYMPHOCYTE MITOGENS COVALENTLY LINKED TO ANTIGENS (L-Mon-3)
G. Jung , G. Becker, K.-H. Wiesmüller, J. Metzger, L. Biesert, W. G. Bessler, H. Bühring, and C. Mueller, <i>Universität Tübingen, Tübingen, FRG</i> |
| 10:00 | A NOVEL CROSSLINKING AGENT AND ITS APPLICATION (L-Mon-4)
Lois Aldwin and Danute E. Nitecki , <i>Cetus Corporation, Emeryville, CA, USA</i> |
| 10:15 | ANTAGONISTIC ANALOGS OF HUMAN TRANSFORMING GROWTH FACTOR ALPHA (L-Mon-5)
J.J. Nestor, Jr. , S.R. Newman, B. DeLustro, and A.B. Schreiber, <i>Institutes of Bio-Organic Chemistry and Biological Sciences, Syntex, Palo Alto, CA, USA</i> |
| 10:30 | COFFEE |
| 11:00 | SYNTHETIC 30-50 PEPTIDE FRAGMENT OF CHOLERA TOXIN β CHAIN BINDS TO GM ₁ GANGLIOSIDE (L-Mon-6)
R. H. Reid , C. A. Hooper, R. L. Richards, C. R. Alving, R. C. Seid, and R. H. Boykins, <i>Walter Reed Army Ins. of Res., Washington, DC, USA</i> |
| 11:15 | ISOLATION AND CHARACTERIZATION OF "NATIVE" AND RECOMBINANT EGLIN C FROM E. COLI, SELECTIVE PROTEINASE INHIBITORS FOR HUMAN LEUKOCYTE ELASTASE, CATHEPSIN G AND CHYMOTRYPSIN (L-Mon-7)
W. Markl , H. Rink, P. Sieber, R. Knecht, H.P. Schnebli and M. Liersch, F. Raschdorf and W. Richter, <i>Ciba-Geigy Ltd., Switzerland</i> |

11 30 PROPERTIES OF INTERFERON- α_2 ANALOGUES PRODUCED FROM SYNTHETIC GENES (L-Mon-8)
R. Camble, M.D. Edge and V.E. Moore *ICI Pharmaceuticals Division, Mereside, Cheshire, UK*

12 00 LUNCH
 (Hart House, University College, Ferguson House)

Afternoon

PHYSICAL METHODS AND CONFORMATION

Session Chair: **Victor J. Hruby**,
University of Arizona, Tucson, AZ, USA

1 30 DESIGN, SYNTHESIS, AND CONFORMATION OF SUPERACTIVE THYMOPOLYETIN-ANALOGUES (L-Mon-9)
H. Kessler, B. Kutscher, A. Klein, R. Kerssebaum, H. Mullner, R. Obermaier *Goethe University, Frankfurt, West Germany*

2 00 CONFORMATIONAL ANALYSIS OF CONOTOXIN AND ITS ANALOGUE BY NMR MEASUREMENTS AND DISTANCE GEOMETRY ALGORITHM (L-Mon-10)
Y. Kobayashi, T. Ohkubo, Y. Kyogoku, Y. Nishiuchi, S. Sakakibara, W. Braun and N. Go *Osaka University, Osaka; Peptide Inst., Osaka; Kyushu University, Fukuoka, Japan*

2 15 DETECTION AND SEQUENTIAL CHARACTERIZATION OF AIB-CONTAINING POLYPEPTIDES ("PEPTAIBOLS") AND UTILIZATION OF THEIR NATURAL MICROHETEROGENEITY FOR AN ASSIGNMENT OF NMR RESONANCES (L-Mon-11)
Hans Brückner, Michael Bokel, and Michael Przybylski *University of Hohenheim, Stuttgart; University of Mainz, FRG*

2 30 ENERGETICS AND DYNAMICS OF A PEPTIDE CRYSTAL (L-Mon-12)
 David H. Kitson and **A.T. Hagler** *The Agouron Institute, La Jolla, CA, USA*

2 45 A METRIC ANALYSIS OF MINIMUM ENERGY CONFORMATIONS OF LYSINE VASOPRESSIN GENERATED USING MOLECULAR DYNAMICS SIMULATION (L-Mon-13)
Judith C. Hempel *Smith Kline and French Laboratories, Philadelphia, PA, USA*

3 00 CRYSTAL STRUCTURE ANALYSIS OF OXYTOCIN (L-Mon-14)
J.E. Pilts, S.P. Wood, I.J. Tickle, S. Cooper, A.M. Trehanne, J. Husain, Y. Mascarenas, J.Y. Li, T.L. Blundell, V.J. Hruby, and H.R. Wyssbrod *Birkbeck College, University of London, U.K.; University of Arizona, Tucson, AZ; Mount Sinai School of Medicine, New York, NY, USA*

3 15 COFFEE

3 45 4-ZINC HUMAN INSULIN CONFORMATIONAL FLEXIBILITY AND ITS EFFECT ON STABILITY AS DETERMINED BY X-RAY CRYSTALLOGRAPHY (L-Mon-15)

G.D. Smith, D.C. Swenson, E.J. Dodson, G.G. Dodson and C.D. Reynolds *Medical Foundation of Buffalo, Inc., Buffalo, NY, USA; University of York, York, England*

4 00 VIBRATIONAL CIRCULAR DICHROISM OF OLIGOPEPTIDES AND PROTEINS: A NEW LOOK AT AN OLD PROBLEM IN BIOCHEMISTRY (L-Mon-16)

T.A. Kelderling, S.C. Yasui, A.C. Sen, C. Toniolo and G.M. Bonifera *University of Illinois at Chicago, Chicago, IL, USA; University of Padova, Padova, Italy*

4 15 A NICKEL BINDING PEPTIDE FROM HUMAN KIDNEY (L-Mon-17)

B. Sarkar and D.M. Templeton *The Hospital for Sick Children, Toronto, Ontario, Canada*

4 30 SYNTHESIS AND TRANSANNULAR REACTION OF CYCLOTRIPETIDES CONTAINING SECONDARY AMIDE GROUPS: THE ANSWER TO A PROBLEM UNSOLVED FOR MORE THAN 30 YEARS (L-Mon-18)

M. Rothe, M. Fahnle, K. Feige, W. Mastle *University of Ulm, Ulm, FRG*

4 45 MOLECULAR CORRELATIONS OF TASTE (L-Mon-19)

M. Goodman, M. Hassan, J. Bland, P.A. Temussi, T. Tancredi and F. Lelj *University of California, San Diego, La Jolla, CA, USA; University of Naples, Naples, Italy*

Tuesday, June 25, 1985

Morning

SEMISYNTHESIS

Session Chair: **Daniel H. Rich**,
University of Wisconsin, Madison, WI, USA

8 30 SEMISYNTHETIC PEPTIDES AND PROTEINS (L-Tue-1)
R.E. Offord *Université de Genève, Genève, Switzerland*

9 00 SITE-SPECIFIC MUTAGENESIS (L-Tue-2)

Robert C. Davenport, Jr. and **Gregory A. Petsko** *Massachusetts Institute of Technology, Cambridge, MA, USA*

9 30 PEPTIDE SEGMENT COUPLING BY USE OF ACYL DISULFIDES (L-Tue-3)

Donald Yameshiro *University of California, San Francisco, CA, USA*

9 45 SEMISYNTHESIS OF α -CHAIN OF HEMOGLOBIN S: V8-PROTEASE CATALYZED CONVERSION OF THE NON-COVALENT FRAGMENT SYSTEM TO COVALENT FORM (L-Tue-4)

A.S. Acharya, S.A. Khan, and R. Seetharam *The Rockefeller University, New York, NY, USA*

10 00 FMOC AMINO-ACID PENTAFLUOROPHENYL ESTERS - VERSATILE NEW REAGENTS IN SOLID PHASE PEPTIDE SYNTHESIS (L-Tue-5)

E. Atherton, Alison Dryland, P. Goddard, and R.C. Sheppard *MRC Laboratory of Molecular Biology, Cambridge, England*

10 15 COFFEE

MINISYMPOSIUM: PROBLEMS IN PEPTIDE COUPLING

Chair: **Bruce Merrifield**

The Rockefeller University, New York, NY, USA

COUPLING OF LARGE PROTECTED PEPTIDE FRAGMENTS IN TRIFLUOROETHANOL SYNTHESIS OF THYMOSIN α_1 (L-Tue-M1)
Arthur M. Felix *Hoffmann-La Roche Inc., Nutley, NJ, USA*

THE IMPACT OF SECONDARY STRUCTURE FORMATION IN PEPTIDE SYNTHESIS (L-Tue-M2)

M. Mutter, K.-H. Altmann, A. Florsheimer, J. Herbert, M. Huber, B. Klein and T. Vorherr *University of Basel, Basel, Switzerland*

DIFFICULT SEQUENCES IN STEPWISE PEPTIDE SYNTHESIS COMMON MOLECULAR ORIGINS IN SOLUTION AND SOLID PHASE? (L-Tue-M3)

Stephen B.H. Kent *California Institute of Technology, Pasadena, CA, USA*

DISCUSSION

LUNCH

12:00-1:30

Afternoon

NON-PROTEIN AMINO ACIDS, GLYCOPEPTIDES

Session Chair: **Daniel F. Veber**, *Merck Sharp and Dohme Research Laboratories, West Point, PA, USA*

1:30 ASYMMETRIC SYNTHESIS OF NON-PROTEINOGENIC AMINO ACIDS (L-Tue-6)
Ulrich Scholköpl, *Institute für Organische Chemie der Universität, Göttingen, FRG*

2:00 NOVEL CONFORMATIONALLY CONSTRAINED AMINO ACIDS AS SUITABLE SUBSTITUTIONS FOR LYSINE-9 IN SOMATOSTATIN ANALOGS (L-Tue-7)

R.F. Nutt, P.E. Curley, R. Saperstein, D.F. Veber, *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA*

2:15 (N-N-BIS[2-OXO-3-OXAZOLIDINYL]-PHOSPHORODIAMIDIC CHLORIDE AS A COUPLING REAGENT FOR N-ALKYL AMINO ACIDS (L-Tue-8)

Roger D. Tung and **D.H. Rich** *University of Wisconsin, Madison, WI, USA*

2:30 CHEMICAL SYNTHESIS OF GLYCOPEPTIDES (L-Tue-9)
Andre A. Pavla *Université de Avignon, Avignon, France*

POSTER SESSION "MTU"

Medical Sciences Building, Lobby and Second Floor (Odd-numbered Posters to be attended 3:00-4:30. Even-numbered Posters to be attended 4:30-6:00)

3:00-6:00

Wednesday, June 26, 1985

Morning

PEPTIDE HORMONES

Session Chair: **John M. Stewart**,
University of Colorado, Denver, CO, USA

8:30 CONFORMATIONAL PROPERTIES OF GASTRIN RELATED PEPTIDES (L-Wed-1)

E. Peggion, M.T. Follani, S. Mammi, M. Goodman, L. Moroder, E. Wunsch, *University of Padua, Padua, Italy*, *University of California at San Diego, La Jolla, CA, USA*, *Max-Planck Institut für Biochemie, Martinsried bei München, West Germany*

8:45 A NEW PROCEDURE FOR ^3H -LABELLING METHIONINE-CONTAINING PEPTIDES. APPLICATION OF THE LABELLING OF METHIONINE-AMIDE, SUBSTANCE P AND NEUROKININ A AND B (L-Wed-2)

Jean-Louis Morgat, Roger Genet, Pierre Fromageot, Gérard Chassaing, Solange Lavielle and Andrée Marquet, *Centre d'Etudes Nucléaires de Saclay, Gif-sur-Yvette, France*, *Université Pierre et Marie Curie, Paris, France*

9:00

DESIGN AND SYNTHESIS OF ORALLY ANTAGONISTS OF THE ANTIURETIC (V_2) AND VASOPRESSOR (V_1) RESPONSES TO ARGININE VASOPRESSIN (AVP) (L-Wed-3)

M. Manning, A. Misicka, S. Stoev, E. Nawrocka, W.A. Kils, A. Olma, K. Bankowski, J. Seto and W.H. Sawyer, *Medical College of Ohio, Toledo, OH*, *College of Physicians and Surgeons of Columbia University, New York, NY, USA*

9:30

MOLECULAR SITES OF OXYTOCIN INACTIVATION IN THE RAT UTERUS: IN VITRO INVESTIGATION WITH "ENZYME PROBES" USING OIL-IMMERSION TECHNIQUE (L-Wed-5)

V. Pliska, G. Jutz and S. Beck, *Technische Hochschule Zurich, Zurich, Switzerland*

9:45

DISCRIMINATION BETWEEN PARATHYROID HORMONE (PTH) AGONISTS AND ANTAGONISTS IN VITRO: MODIFICATION OF THE RENAL MEMBRANE ADENYLATE CYCLASE ASSAY TO REFLECT IN VIVO ACTIVITY OF PTH ANALOGS (L-Wed-6)

Lynn H. Caporale, Patricia A. DeHaven, George A. Tyler and Michael Rosenblatt, *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA*

10:00 COFFEE

10:15

NOVEL SIDE-CHAIN TO SIDE-CHAIN LINKED CYCLIC OPIOID PEPTIDE MONOMERS AND DIMERS: SYNTHESIS AND ACTIVITY PROFILES (L-Wed-7)

P.W. Schiller, T.M.-D. Nguyen, C. Lemieux and L.A. Maziak, *Clinical Research Institute of Montreal, Montreal, Que., Canada*

RELATIONSHIPS OF CONFORMATION TO BIOLOGICAL ACTIVITY FOR CONFORMATIONALLY CONSTRAINED DELTA RECEPTOR SPECIFIC CYCLIC ENKEPHALINS (L-Wed-8)
V.J. Hruby, L.-F. Kao, T.K. Burks and L.D. Hirling *University of Arizona, Tucson, AZ, USA*

POTENT CONFORMATIONALLY CONSTRAINED ANALOGS OF GnRH (L-Wed-9)
J. Varga, J. Porter, M. Perrin, Y. Haas, A. Corrigan, S. Struthers, C. Rivier, A. Hagler, W. Vale and **J. Rivier** *The Salk Institute, La Jolla, CA, The Agouron Institute, La Jolla, CA, USA*

PIERCE AWARD LECTURE: ROBERT SCHWYZER
Introduction: Kenneth D. Kopple, Illinois Institute of Technology, Chicago, IL, USA; Co-Chairman, Ninth American Peptide Symposium.

PEPTIDE CHEMISTRY AS A TOOL IN MOLECULAR BIOLOGY.
Robert Schwyzler, *Swiss Federal Institute of Technology (E.T.H.), Zurich, Switzerland*

12:00 LUNCH

Afternoon

Wednesday Afternoon is "Open".
 (Buses for the participants taking the Niagara Falls Trip will depart at 1:00 P.M. from King's College Circle adjacent to the Medical Sciences Building.)

5:30-8:00 WINE-AND-CHEESE RECEPTION
 Great Hall, Hart House

Thursday, June 27, 1985

Morning

ENZYME INHIBITORS AND TOXINS

Chair: **Clark W. Smith**,

The Upjohn Company, Kalamazoo, MI, USA.

8:30 "TRANSITION STATE" SUBSTITUTED RENIN INHIBITORY PEPTIDES: STRUCTURE-CONFORMATION-ACTIVITY STUDIES ON N^α-FORMYL-TRP AND TRP MODIFIED CONGENERS. (L-Thu-1)
T.K. Sawyer, D.T. Pals, C.W. Smith, H. Saneii, J.B. Hester, R.E. TenBrink, D.J. Staples, A.E. deVaux, J.A. Alfholter, G.F. Skala, B. Kamdar, D.E. Emmert, J. Lawson, W. Kali and M. Schuette. *The Upjohn Company, Kalamazoo, MI, USA.*

9:00 POTENT INHIBITORS OF HOG AND HUMAN RENIN CONTAINING AN AMINOALCOHOL DIPEPTIDE SURROGATE. (L-Thu-2)
D.E. Ryono, C.A. Free, R. Neubeck, S.G. Samaniego and E.W. Petrillo, Jr. *The Squibb Institute for Medical Research, Princeton, NJ, USA.*

9:15 A STEREOCONTROLLED SYNTHESIS OF HYDROXYETHYLENE DIPEPTIDE ISOSTERES USING NOVEL CHIRAL AMINOALKYL EPOXIDES: NEW RENIN INHIBITOR ANALOGS (L-Thu-3)
Ben E. Evans, Kenneth E. Rittle, James P. Springer, Martin P. Poe, Edgar H. Ullm and Daniel F. Veber *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA.*

9:30 COMPARISON OF THE STRUCTURES OF INHIBITORS AND A SUBSTRATE ANALOG OF ANGIOTENSIN CONVERTING ENZYME (L-Thu-4)
 Alice Vrielink and **Penelope W. Coddling** *University of Calgary, Calgary, Alberta, Canada*

9:45 LARGE-SCALE N-CARBOXYANHYDRIDE PREPARATION OF L-ALANYL-L-PROLINE AND N_ε(TRIFLUOROACETYL)-L-LYSYL-L-PROLINE: SYNTHESIS OF THE ACE INHIBITORS ENALAPRIL AND LISINAPRIL. (L-Thu-5)
Thomas J. Blacklock, R.F. Shuman and John W. Butcher *Merck Sharp & Dohme Research Laboratories, Rahway, NJ, USA*

10:00 A NEW APPROACH TO THE SYNTHESIS OF PEPTIDE ALDEHYDE INHIBITORS (L-Thu-6)
R.J. Beynon, J. Chetland, **I.J. Galpin** and **M.T. Mulligan** *University of Liverpool, Liverpool, England*

10:15 COFFEE

10:30 STRUCTURE-ACTIVITY RELATIONSHIPS IN CONOTOXINS (L-Thu-7)
William R. Gray *University of Utah, Salt Lake City, UT, USA*

11:00 SNAKE VENOM NEUROTOXINS: CONFORMATION AND TOPOGRAPHY OF THEIR BINDING TO NICOTINIC ACETYLCHOLINE RECEPTOR (L-Thu-8)
Vi. Teetlin *Shemyakin Institute of Bioorganic Chemistry, Academy of Sciences, Moscow, USSR.*

11:30 MICROBIAL FERMENTATIONS AS A SOURCE OF PEPTIDE RECEPTOR LIGANDS. (L-Thu-9)
G. Albers-Schönberg, R. Chang, V. Lotti, T. Chen, R. Monaghan, J. Birnbaum, E. Stapley, M. Goetz, J. Liesch, O. Hensens, J. Springer, **Merck Sharp & Dohme Research Laboratories, Rahway, NJ, USA.**

12:00-1:30 LUNCH

Afternoon

PEPTIDE-LIPID INTERACTIONS

Chair: **Peter W. Schiller**, *Clinical Research Institute of Montreal, Montreal, Quebec, Canada*

1:30 DESIGN AND CONSTRUCTION OF PEPTIDES AND PROTEINS WITH AMPHIPHILIC SECONDARY STRUCTURES. (L-Thu-10)
E.T. Kaiser *The Rockefeller University, New York, NY, USA*

2:00 THE AMPHIPATHIC HELIX IN PHOSPHOLIPID-PROTEIN INTERACTIONS: THE ROLE OF HYDROPHOBICITY AND HELICAL POTENTIAL. (L-Thu-11)
James T. Sparrow, Henry J. Pownall, Gabriel Ponsin, Pradip K. Bhatnagar, Giroom G. Chang, and Antonio M. Gotto, Jr. *Baylor College of Medicine, Houston, TX, USA.*

2:30 CONFORMATIONAL PROPERTIES AFFECTING THE BIOLOGICAL ACTIVITY OF SALMON CALCITONIN (L-Thu-12)
Richard M. Epand, Raquel F. Epand, R.C. Orłowski and J.K. Seyler *McMaster University Health Sciences Centre, Hamilton, Ontario, Canada; Armour Pharmaceutical Company, Kankakee, IL, USA*

2 45 HYDROPHOBIC PEPTIDE INHIBITORS OF SICKLE HEMOGLOBIN AGGREGATION HAVE SIMILAR STRUCTURAL FEATURES (L-Thur-13)
S.K. Burley, A H-J Wang, J R Volano and A Rich *Massachusetts Institute of Technology, Cambridge, MA, USA.*

3 00-6 00 POSTER SESSION "WTh"

Odd-numbered posters to be attended 3:00-4:30.
 Even-numbered posters to be attended 4:30-6:00

7 00 Cocktail Hour and "CANADA SEA-TO-SEA" BANQUET

Old Mill Restaurant, Etobicoke, Ontario
 (Buses depart from King's College Circle, adjacent to the Medical Sciences Building at 6:30 PM.)

Friday, June 28, 1985

Morning

MINISYMPOSIUM: ATRIAL NATRIURETIC FACTORS

Chair: Ralph F. Hirschmann, Merck, Sharp and Dohme Research Laboratories, Rahway, NJ, USA. (L-Fri-M)

HISTORICAL INTRODUCTION AND OVERVIEW

Adolfo J. de Bold, *Queen's University, Kingston, Canada.*

PHYSIOLOGIC ROLE OF ANF

Marc Cantlin, *Clinical Research Institute of Montreal, Montreal, Canada.*

STUDIES WITH ANF RECEPTORS

Mary A. Napier, *Merck, Sharp and Dohme Research Laboratories, Rahway, NJ, USA.*

COFFEE

MOLECULAR FORMS AND DISTRIBUTION IN MAMMALIAN TISSUES AND PLASMA OF ATRIAL NATRIURETIC POLYPEPTIDES

Hisayuki Matsuo, *Miyazaki Medical College, Miyazaki, Kiyotake, Japan.*

PHARMACOLOGY OF THE ATRIAL PEPTIDES

Philip Needleman, *Washington University School of Medicine, St Louis, MO, USA.*

CLINICAL STUDIES

Michael Rosenblatt, *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA*

DISCUSSION

12 00 SYMPOSIUM CLOSES

POSTER SESSION "MTu"

HYDROGEN ION TITRATION OF CONFORMATIONALLY RESTRICTED ANGIOTENSIN II ANALOGS

L. Juliano, A Miranda, C R Nakae and A C M Paiva *Escola Paulista de Medicina, Sao Paulo, Brazil*

INVESTIGATION OF THE PATHWAY OF PROTEIN FOLDING BY SITE-SPECIFIC CHEMICAL MODIFICATION AND FLUORESCENCE EXCITATION ENERGY-TRANSFER MEASUREMENTS

D. Amir and E. Haas *Bar-Ilan University, Ramat-Gan, Israel*

SYNTHESIS OF (R)- AND (S)-1-AMINO-[2,2-²H₃]CYCLOPROPANE-1-CARBOXYLIC ACIDS: A DOUBLE VIOLATION OF SCHOLLKOPF'S RULE

Pullachipatti K. Subramanian and Ronald W Woodard *College of Pharmacy, University of Michigan, Ann Arbor, MI, USA.*

THE DIFFERENTIATION OF π - AND τ -DERIVATISED HISTIDINES

Roberto Colombo, Fabio Colombo, Andrew E. Derome, Francesca Fontana, John H. Jones, Daniel L. Rathbone, and David W Thomas *University of Milan, CNR and Scientific Institute S. Raffaele, Milan, Italy, University of Oxford, Oxford, U.K.*

DITHIOETHER-CONTAINING CYCLIC ENKEPHALIN ANALOGS

Henry I. Mosberg and John R. Omnaas *College of Pharmacy, University of Michigan, Ann Arbor, MI, USA.*

DESIGN, SYNTHESIS AND BIOLOGICAL ACTIVITY OF TOPOLOGICALLY RELATED PARTIAL NON-PEPTIDIC-PEPTIDOMIMETIC ANALOGS OF SUBSTANCE P AND ENKEPHALIN

E. Rubini, U. Wormser, D. Levian-Teitelbaum, C. Gilon, Z. Selinger and **M. Chorev**, *The Hebrew University of Jerusalem, Jerusalem, Israel.*

THE SYNTHESIS AND SAR OF ORALLY ACTIVE ENKEPHALIN

ANALOGS WITH MODIFIED N-TERMINAL TYROSINE RESIDUES
Donald W. Hansen Jr., Robert H. Mazur, Michael Clare *Searle Research and Development, Skokie, IL, USA.*

SYNTHESIS AND BIOLOGICAL ACTIVITIES OF FOUR NEW

PHOTOAFFINITY LABELLING ANALOGUES OF LHRH

Zbigniew Mackiewicz, Ginette Lagacé, Michelle Beauchesne, Serge Bélisle, Diego Bellabarba, Nicole Gallo-Payet, Jean-Guy Lehoux and **Emanuel Escher**, *University of Sherbrooke, Sherbrooke, Quebec, Canada.*

A CYCLIC HEXAPEPTIDE LH-RH ANTAGONIST

Roger M. Freidinger, C. Dyllon Colton, Richard Saperstein, Edward J Brady, William C. Randall, and Daniel F. Veber, *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA.*

CYCLIC β -CYANOENAMINES AS CONFORMATIONALLY RIGID ANALOGS OF THE PEPTIDE BOND

D. S. Kemp and Jeffery Carter, *Massachusetts Institute of Technology, Cambridge, MA, USA*

EXAMINATION OF THE CONFORMATIONAL REQUIREMENTS OF GLUCAGON AT ITS RECEPTOR

John L. Krstenansky, Beat Gysin, Dev Trivedi, and Victor J. Hruby *University of Arizona, Tucson, AZ, USA*

- P-MTu-12 INTRAMOLECULAR MOBILITY IN A CYCLIC OCTAPEPTIDE EFFECT ON SPIN LATTICE RELAXATION IN THE ROTATING FRAME
Kenneth D. Kopple and Yu-Sen Wang *Illinois Institute of Technology, Chicago, IL, USA*
- P-MTu-13 AN EXPOSED BACKBONE IN L¹-PERHYDROANTAMANIDE, AN INACTIVE ANALOG OF THE CYCLIC DECAPEPTIDE ANTAMANIDE
Isabella L. Karle *Naval Research Laboratory, Washington, DC, USA*
- P-MTu-14 SYNTHESIS AND CONFORMATIONAL ANALYSIS OF THREE DEHYDROPHENYLALANINE-CONTAINING MODEL CYCLIC PENTAPEPTIDES
Alvin C. Bach II, Lila M. Gierasch, and Arnold L. Rheingold *University of Delaware, Newark, DE, USA*
- P-MTu-15 A 500 MHz NMR STUDY OF THE 20-31 FRAGMENT OF CALMODULIN OF THE CORRESPONDING CYCLIC ANALOG
A. Molit, T. Tancredi, P. A. Temussi *Istituto Chimica MIB of CNR and University of Naples, Arco Felice, Italy*
- P-MTu-16 A SYNTHETIC OLIGOPEPTIDE SIGNAL PEPTIDE OF BACTERIORHODOPSIN
Paul Wrede, Georg Buldt, Benno Hess and **Martin Engelhard** *Freie Universität Berlin, Berlin, FRG; Max-Planck-Institut für Ernährungsphysiologie, Dortmund, FRG*
- P-MTu-17 BIOPHYSICAL STUDIES OF GENETICALLY-DEFINED SYNTHETIC SIGNAL SEQUENCES
M. S. Briggs, D. G. Cornell, G. J. Feulner, D. W. Hoyt, C. J. McKnight, A. N. Stroup, and **L. M. Gierasch** *University of Delaware, Newark, DE, Yale University, New Haven, CT; Eastern Regional Research Center, Philadelphia, PA, USA*
- P-MTu-18 THE CONFORMATIONAL PROPERTIES OF THR-RESIDUE
I. Z. Slemmon, K. Sobczyk and M. Lisowski *Wrocław University, Poland*
- P-MTu-19 SYNTHESIS OF FLUORESCENT SIGNAL PEPTIDES AND THEIR INTERACTION WITH MODEL MEMBRANES
M. Joseph and **R. Nagaraj** *Centre for Cellular & Molecular Biology, Hyderabad, India*
- P-MTu-20 SYNTHESIS OF APOLIPOPROTEIN C-II PEPTIDES AND STUDIES OF THEIR ACTIVATION OF LIPOPROTEIN LIPASE
Patrick Kanda, Michael F. Rohde, Antonio M. Gotto, Jr., and James T. Sparrow *Baylor College of Medicine and the Methodist Hospital, Houston, TX, USA*
- P-MTu-21 ¹H- and ³¹P-NMR STUDIES OF MORPHINE, MET-ENKEPHALIN AND -ENDORPHIN BINDING TO DODECYLPHOSPHORYLCHOLINE
Pierluigi Gariboldi, Dipartimento di Chimica Organica e Industriale dell'Università di Milano, Milano, Italy
- P-MTu-22 CHARACTERIZATION OF HYDROPHOBIC PEPTIDES BY MASS SPECTROMETRY: FAB/MS STUDIES OF M13 LEADER PEPTIDE
A. Eisenberg Shinnar, E. T. Kaiser and Steven Carr *The Rockefeller University, New York; Smith, Kline, French, Philadelphia, PA, USA*
- P-MTu-23 SYNTHETIC PEPTIDE ANALOGS OF APOLIPOPROTEINS
G. M. Anantharaman, Christine G. Brouillette, Byung H. Chung, Charlie F. Schmidt, Ali Gawish and Jere P. Segrest *University of Alabama at Birmingham, Birmingham, AL, USA*
- P-MTu-24 INTERACTION OF OPIOID PEPTIDES WITH MODEL MEMBRANES: ¹H-NMR EVIDENCE FOR THE FORMATION OF A FOLDED STRUCTURE OF β -ENDORPHIN IN MICELLAR SYSTEMS
Lucia Zetta *Istituto Chimica Macromolecole, Milano, Italy*
- P-MTu-25 STRUCTURAL STUDIES OF INTERLEUKIN 2
Thomas L. Clardell, Robert Galski, Joann Strnad, Larry Butler, and Kendall Smith *Dartmouth Medical School, Hanover, NH, The Lilly Research Laboratories, Eli Lilly & Co., Indianapolis, IN, The Veterans Administration Hospital, White River Jct., VT, USA*
- P-MTu-26 CONFORMATION OF THE TRI-PROLINE SEQUENCE OF MYELIN BASIC PROTEIN
Paul E. Fraser and Charles M. Deber *University of Toronto, The Hospital for Sick Children, Toronto, Ontario, Canada*
- P-MTu-27 EMPIRICAL RULES PREDICTING CONFORMATION OF CYCLIC TETRAPEPTIDES FROM PRIMARY STRUCTURE
Tetsuo Kato, Sannamu Lee, Yasuyuki Shimohigashi, and Nobuo Izumiya *Kyushu University, Fukuoka University, Fukuoka, Japan*
- P-MTu-28 CONFORMATION OF CYCLO-(L-PROLYL-GLYCYL)₃ IN ITS COMPLEX WITH SODIUM AND CALCIUM
K. Krishna Bhandary and Gopinath Kartha *Roswell Park Memorial Institute, Buffalo, NY, USA*
- P-MTu-29 BICYCLIC NONAPEPTIDES: SYNTHESIS, CONFORMATION, AND ION-BINDING
Giancarlo Zanotti, **Bruce Campbell**, Mark A. Staples, Eric T. Fessel, and Elkan R. Blout *Harvard Medical School, Beth Israel Hospital, Boston, MA, USA*
- P-MTu-30 SYNTHESIS AND CONFORMATIONAL COMPARISON OF PROLINE AND HYDROXYPROLINE-CONTAINING PEPTIDES
V. S. Ananthanarayanan and S. K. Atiah-Poku *Memorial University, St. John's, Newfoundland, Canada*
- P-MTu-31 ¹³C NMR CP/MAS SPECTROSCOPIC STUDY OF SOLID PROLINE CONTAINING PEPTIDES AND PROTEINS
Hans R. Kricheldorf and Detlef Müller *Institut für Technische und Makromolekulare Chemie der Universität, Hamburg, West Germany*
- P-MTu-32 PROLINE RING MOTION IN SOLID STATE: A ²H NMR STUDY
Susanta K. Sarkar, P. E. Young, C. E. Sullivan and D. A. Torchia *National Institutes of Health, Bethesda, MD, York College, CUNY, Jamaica, NY, USA*
- P-MTu-33 SELF-ASSOCIATION AND SOLUBILITY OF PEPTIDES: A SOLVENT TITRATION STUDY OF PEPTIDES RELATED TO THE C-TERMINAL DECAPEPTIDE SEQUENCE OF PORCINE SECRETIN
C. Toniolo and G. M. Bonora *University of Padova, Padova, Italy, Case Western University, Cleveland, OH, USA*
- P-MTu-34 SUBSTRATES FOR THE ASPARTYL PROTEINASES
Ben M. Dunn, Melba Jimenez, Benne Parthen, and Jeff Van-Buren *University of Florida College of Medicine, Gainesville, FL, USA, Cardiff College, Cardiff, Wales, UK*

- P-MTu-48
SOLID PHASE SYNTHESIS OF SEQUENCE 19 OF BETA-2
PROTHROMBIN PRECURSOR BY DIFFERENT METHODS
Gunter Benz, Richard Pottorf, and Daniel H. Rich, *School of Pharmacy, University of Wisconsin, Madison, WI, USA*
- P-MTu-49
AS PEPTIDE LENGTH INCREASES DURING SOLID PHASE
SYNTHESIS THE AMINO TERMINUS pKa INCREASES, FREE IN
AQUEOUS SOLUTION THE pKa DECREASES
C. A. Hooper, J. J. Bresch and R. H. Reid, *Walter Reed Army Institute of Research, Washington, DC, USA*
- P-MTu-50
PREPARATION AND USE OF AN AMINOETHYL POLYETHER
GLYCOL-CROSSLINKED POLYSTYRENE GRAFT RESIN SUPPORT
FOR SOLID-PHASE PEPTIDE SYNTHESIS
Shmuel Zalipsky, Fernando Alberico, and George Barany, *University of Minnesota, Minneapolis, MN, USA*
- P-MTu-51
AN IMPROVED SYNTHESIS OF BENZHYDRYLAMINE RESIN
William M. Bryan, *Smith Kline & French Laboratories, Philadelphia, PA, USA*
- P-MTu-52
A CONVENIENT GENERAL METHOD FOR THE PREPARATION OF
BOC-PROTECTED PEPTIDE ALCOHOLS BY THE REDUCTION OF
THE CORRESPONDING PEPTIDYL RESINS WITH SODIUM
BOROHYDRIDE
T. M. Balasubramanian, A. S. Redinski, J. Zabrocki and G. R. Marshall, *Washington University Medical School, St. Louis, MO, USA*
- P-MTu-53
EVALUATION OF DIFFERENT HF CLEAVAGE PROCEDURES BASED
ON SEVERAL SOLID PHASE SYNTHESIS OF PEPTIDES AT MICRO
SIZE SCALE
A. Scarso, R. Viville, J. Degelaen, *UCB-Bioproducts S.A., Bioline, L'Alleud, France*
- P-MTu-54
ACYLATION WITH N⁶-PROTONATED ARGinine AND C-TERMINAL
ARGININE CONTAINING PEPTIDES IN SEMISYNTHESIS
V. K. Nalihan and H.-G. Gattner, *Deutsches Wollforschungsinstitut der TH Aachen, Aachen, West Germany*
- P-MTu-55
TRITIUM LABELLING OF INSULIN BY ENZYMATIC SEMIOTRANSFER
K.-D. Kaufmann, J. Oehlke, A. Hansicke, M. Beyersmann and M. Frey, *Institute of Drug Research, Academy of Sciences of GDR, Berlin*
- P-MTu-56
TRITATION OF PEPTIDES TO HIGH SPECIFIC ACTIVITY
SYNTHESIS OF (P³H)₄ NORVALINE¹ or MSH (P³H)₄ NORVALINE² or
PHENYLALANINE³ or MSH and (P³H)₄ NORVALINE⁴ or
MELANOPHORE-CONCENTRATING HORMONE (MCH)
Alex N. Eberle, Klaus Neubert, Jürg Girard and Albert Zeller, *Children's Hospital and University Children's Hospital Basel, Kantonsspital, Basel, Switzerland*
- P-MTu-57
CHEMICAL CLEAVAGE OF PEPTIDES BEFORE CLEAVAGE OF
RESIDUES
Shabbir A. Khan and Bruce W. Erickson, *The Rockefeller University, New York, NY, USA*
- P-MTu-58
A RAPID METHOD FOR THE DETERMINATION OF THE AMINO ACID
CONTENT OF SOLID PHASE RESIN SUPPORT MATERIALS
Paul S. Darman, Dharmendra N. Chaturvedi, Richard S. Nelson, and James W. Nelson, *James W. Nelson Vega Biotechnology Inc., Jackson, AZ, USA*
- P-MTu-36
INHIBITION OF AMINOPEPTIDASES BY PEPTIDES INCORPORATING
THE KETOMETHYLENE GROUP AS AN AMIDE BOND
REPLACEMENT
Scott L. Harbeson and Daniel H. Rich, *School of Pharmacy, University of Wisconsin, Madison, WI, USA*
- P-MTu-37
FLUOROPHOSPHONAMIDE-CONTAINING PEPTIDE ANALOGS AS
IRREVERSIBLE PEPTIDASE INHIBITORS
Michael Calandra, *Rutgers University, New Brunswick, NJ, USA*
- P-MTu-38
NMR EVIDENCE FOR A COVALENT INTERMEDIATE IN PEPSIN-
CATALYZED REACTIONS
Charles M. Deber, **Mary K. Lulek** and Theo Hofmann, *University of Toronto, The Hospital for Sick Children, Toronto, Ontario, Canada*
- P-MTu-39
CONFORMATIONAL STUDY OF OLIGOPEPTIDES CONTAINING
GLYCINE AND LEUCINE RESIDUES
M. D'Alagni and M. Manigrasso, *Universita di Roma "La Sapienza", Roma, Italy*
- P-MTu-40
SYNTHESIS AND BIOLOGICAL PROPERTIES OF NOVEL
TRYPTOPHAN-MODIFIED PEPTIDES: CONVENIENT PREPARATION
OF 2-SUBSTITUTED TRYPTOPHAN DERIVATIVES
Stephen F. Brady, Richard Saperstein, and Roger M. Freidinger, *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA*
- P-MTu-41
SYNTHESIS OF NOVEL SYMMETRIC DIAMINO ACIDS
P. Anantha Reddy and Bruce W. Erickson, *The Rockefeller University, New York, NY, USA*
- P-MTu-42
PENTAFLUOROPHENOL DERIVATIVES IN PEPTIDE SYNTHESIS
L. Kistaludy, L. Olovos Jr., I. Schon, M. Low, *Chemical Works of Gedeon Richter Ltd., Budapest, Hungary*
- P-MTu-43
TRIBENZYLAMINE AS A VERY EFFICIENT SUPPRESSOR OF SIDE
PRODUCT YIELD IN PEPTIDE SYNTHESIS
Aleksander M. Kolodziejczyk and Marek Sieboida, *Technical University of Gdansk, Gdansk, Poland*
- P-MTu-44
THE P-METHYLSULFONYLBENZYL GROUP, A SELECTIVELY
CLEAVABLE CARBOXYL PROTECTING GROUP
James Samanen, Ester Brandeis, *Smith, Kline Beckman Corporation, Palo Alto, CA, USA*
- P-MTu-45
BENZYL-8-HYDROXY-CHINOLYL-CARBONATE (Z-8-OQ): A NEW
REAGENT FOR THE PREPARATION OF Z-AMINO-ACIDS WITHOUT
SIDE REACTION(S)
Andras Turan, *Ferring Arzneimittel GmbH, Kiel, West Germany*
- P-MTu-46
CARBOHYDRATE DERIVATIVES OF PEPTIDES: SYNTHESIS OF A
GLYCATED HEPTAPEPTIDE SEQUENCE OF HUMAN HEMOGLOBIN
John Halsstrom and Viggo Kruse, *Novo Research Institute, Bagsvaerd, Denmark*
- P-MTu-47
LARGE SCALE SYNTHESIS OF hGRF [1-44]NH₂
J. Diaz, R. Guegan, P. Cabrera, Y. Muneaux, P. Perreault, M. Vedel, R. Roncucci, *Centre de Recherches Chim-Midy-Sanofi, Montpellier, France*
- P-MTu-48
IMPROVED RESULTS WITH DCC-HOBT COUPLINGS FOR PEPTIDES
CONTAINING TOS HIS
D. Chaturvedi, J. Dattilo, P. Darman, K. Savastava, G. Fuchter, C. Gregorsky, and R. Carter, *Vega Biotechnology Inc., Jackson, AZ, USA*

- P-MTu-59 A MONITORING METHOD FOR SOLID PHASE PEPTIDE SYNTHESIS USING N- α -TERTIARY-BUTOXYCARBONYL (BOC) PROTECTION FOR AMINO ACIDS
S. M. Kalbag, E. S. Snyder, P. J. Voelker, and J. L. Hughes *Smithkline Beckman Corporation, Palo Alto, CA, USA*
- P-MTu-60 GEL PHASE ^{13}C NMR SPECTROSCOPY AS A METHOD OF ANALYTICAL CONTROL IN ULTRA HIGH LOAD SOLID (GEL) PHASE PEPTIDE SYNTHESIS
F. G. W. Butwell, R. Epton, P. W. Small and **D. A. Wellings** *Wolverhampton Polytechnic, Wolverhampton, England*
- P-MTu-61 HYDROPHOBICITY PARAMETERS IN PEPTIDES. 1. PREDICTION OF PEPTIDE RETENTION IN REVERSED-PHASE HPLC (RPC)
D. Guo, C. T. Mant, J. M. R. Parker, and R. S. Hodges *University of Alberta, Edmonton, Alberta, Canada*
- P-MTu-62 APPLICATION OF HIGH PERFORMANCE LIQUID CHROMATOGRAPHY AND NMR-SPECTROSCOPY TO THE DETECTION OR RACEMIZATION DURING PEPTIDE SYNTHESIS
Hans-Werner Lahm, Heinz Berndt, and Helmut Zahn *Roche Research Center, Hoffmann-La Roche Inc. Nutley, NJ, USA*
- P-MTu-63 TOTALLY SYNTHETIC PEPTIDES IN THE SEMISYNTHESIS OF CYTOCHROME c
C. J. A. Wallace *Institut de Biochimie, Switzerland; Centro di Studi sui Biopolimeri, Padova, Italy*
- P-MTu-64 SYNTHESIS OF DIHYDROFOLATE REDUCTASE ENCODED BY PLASMID R67
Richard Ogden, Dan Herendeen and Suzanna Horvath *The Agouron Institute, La Jolla, CA; California Institute of Technology, Pasadena, CA, USA*
- P-MTu-65 ON THE INDISPENSABILITY OF Arg³⁶ IN COMPLEXES OF COMPLEMENTARY CYTOCHROME C FRAGMENTS
H. A. Boots and G. I. Tesser *Catholic University Nijmegen, Nijmegen, The Netherlands*
- P-MTu-66 MODIFICATION AND CLEAVAGE OF PEPTIDES AT ASPARAGINE AND GLUTAMINE RESIDUES
James K. Blodgett and **G. Marc Loudon** *Purdue University, West Lafayette, IN, USA*
- P-MTu-67 STRUCTURE ACTIVITY STUDIES ON DEHYDROAMINO ACID CONTAINING ADDUCTS OF TENTOXIN AND MALFORMIN
J. V. Edwards, A. Lak, E. B. Lillehoj *United States Department of Agriculture, Southern Research Center, New Orleans, LA, USA*
- P-MTu-68 METABOLIC PROFILING OF PITUITARY PEPTIDES BY A NOVEL COMBINATION OF HPLC, HRA, HIA, and MS
D. M. Desiderio, H. Takahashi, H. Onishi, G. Fredlund, and C. Dasso *University of Toronto and Centre for the Health Sciences, Mount St. Vincent, Toronto, Canada*

- P-MTu-70 SYNTHESIS AND PROPERTIES OF A DUTILLOXEPIN-INSULIN DIMER
W.H. Fischer, D. J. Saunders, A. Wollmer, and H. Zuber *Boehringer-Ingelheim, Biberach, Germany; Boehringer-Ingelheim, Biberach, Germany; Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-71 PURIFICATION OF MICROHETEROGENEOUS POLYMERIZATION OF GLYCOPROTEIN FRAGMENTS BY MULTIDIMENSIONAL GEL PERFORMACE ELECTROPHORETIC CHROMATOGRAPHY AND RADIOLABELLED OPTIMISATION OF RESOLUTION PARAMETERS FOR ANALYTICAL MODELS
Milton T. W. Hearn, P. G. Martin, M. J. Agnew, and A. J. B. Cook *University of Manchester, Manchester, England; University of Manchester, Manchester, England*
- P-MTu-72 NON DESTRUCTIVE MONITORING OF SOLID PHASE PEPTIDE SYNTHESIS BY MASS SPECTROMETRY
Robert Jacquier, Jean-Louis A. Boudry, M. J. Agnew, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany; University of Manchester, Manchester, England*
- P-MTu-73 CHROMATOGRAPHY OF PEPTIDE POLYMERIZATION PRODUCTS: PLANET CENTRIFUGAL
Martha Knight *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-74 MICROANALYSIS OF PEPTIDE POLYMERIZATION PRODUCTS WITH PREFERENCE FOR VARIATION IN AMINO ACID SEQUENCE
Manuel E. Jimenez, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-75 SYNTHESIS OF PEPTIDES BY THE SOLID PHASE METHOD
Richard Polton, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-76 SYNTHESIS OF PEPTIDES BY THE SOLID PHASE METHOD
Maqsood A. Sheikh, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-77 TOTAL SYNTHESIS OF PEPTIDES BY THE SOLID PHASE METHOD
James Blake, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-78 PEPTIDE POLYMERIZATION BY THE SOLID PHASE METHOD
C. S. Pande, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*
- P-MTu-79 PEPTIDE POLYMERIZATION BY THE SOLID PHASE METHOD
R. de Castiglione, J. B. Dumas, and J. B. Dumas *Boehringer-Ingelheim, Biberach, Germany*

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- P-MTu-81 METHODS OF SYNTHESIS AND SOLID PHASE COUPLING OF KETOMETHYLENE DIPEPTIDE ISOSTERES
C. M. Olsen, A. K. Judd, and R. G. Almquist *SRI International, Menlo Park, CA, USA.*
- P-MTu-82 DESIGN AND SYNTHESIS OF HIGHLY IMMUNOGENIC PEPTIDE PREPARATIONS
V. I. Delgin, E. A. Makarov, V. A. Rar, V. V. Jurowski *Branch of Shemyakin Institute of Bioorganic Chemistry USSR, Academy of Sciences, Moscow Region, Puschino, USSR.*
- P-MTu-83 DEVELOPMENT OF SITE-SPECIFIC ANTIBODIES FROM SYNTHETIC PEPTIDES OF THE c-myc ONCOGENE PROTEIN STUDIES TOWARD STRUCTURE-FUNCTION RELATIONSHIPS
D. R. Bollin, I.-I. Sytzu and J. Meienhofer *Roche Research Center, Nutley, NJ, USA.*
- P-MTu-84 TWIN- α_1 , THE HEAD-TO-HEAD ANALOG OF THYMOSIN- α_1 IS A MORE POTENT IMMUNOREGULATORY DRUG THAN THE PARENT COMPOUND
Chr. Blir, T. L. Ciardelli, T. C. Nebe, W. Heinzel, K. Gottschall, M. Young *Max-Planck-Institute for Medical Research, Heidelberg, FRG.*
- P-MTu-85 ORAL IMMUNISATION WITH A SYNTHETIC PEPTIDE SELECTED IN THE CHOLERA TOXIN B SUBUNIT OBTENTION OF SERUM ANTIBODIES AND LOCAL PROTECTION
A. Gruaz-Guyon, A. Delmas, S. Pedoussaut, G. Milhaud, D. Raulais, P. Rivaille *CHU Saint-Antoine, Paris, France.*
- P-MTu-86 PHYSALAEAMIN-LIKE PEPTIDES FROM RABBIT STOMACH PURIFICATION AND ELUCIDATION OF STRUCTURE USING FAST ATOM BOMBARDMENT-TANDEM MASS SPECTROMETRY
W. E. Wilson, D. J. Harvan, C. Hamm, L. H. Lazarus, D. G. Clapper, and H. Yajima *Natl. Inst. Environ. Health Sci., Research Triangle Park, NC; University of N. Carolina, Chapel Hill, NC, USA; Kyoto University, Kyoto, Japan.*
- P-MTu-87 MAPPING OF THE HUMAN RENIN "PRO" SEGMENT SYNTHESIS OF PEPTIDES FRAGMENTS COMPARISON OF THEIR IMMUNOGENIC AND INHIBITORY PROPERTIES
J. Bounnik, J. A. Fehrentz, F. Cumin, F. X. Galen, R. Seyer, G. Evin, B. Castro, J. Menard and P. Convol *Inserm U36, Paris; Centre CNRS-Inserm de Pharmacologie-Endocrinologie, Montpellier; UER de Medecine et de Pharmacie, Limoges, France.*
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Grazyna Adamus, Anatol Arendt, Heidi E. Hamm, Paul A. Hargrave, Robert W. Jackson, J. Hugh McDowell, Agnieszka Szary, and Joseph S. Takahashi *University of Carbondale, IL, University of Illinois, Chicago, IL, Northwestern University, Evanston, IL, USA.*
- P-MTu-89 ANTIBODY BINDING BY CHEMICALLY SYNTHESIZED SEQUENCE 49-58 OF LACTATE DEHYDROGENASE
Pravin Kaumaya, Joyce Shelton, Elizabeth Wilder, Cathy Driscoll, Erwin Goldberg *Northwestern University, Evanston, IL, USA.*
- P-MTu-90 THE USE OF SITE-DIRECTED-POLYCLONAL ANTIBODIES AS IMMUNOTOPOLOGICAL PROBES FOR THE lac PERMEASE OF *ESCHERICHIA COLI*
W. Danho, R. Makalske, F. Hutter, T. F. Gabriel, N. Carrasco and E. H. Kabaek *Hoffmann-La Roche Inc., Nutley, NJ, USA.*
- P-MTu-91 NEW APPROACHES TO A SAFE FOOT AND MOUTH DISEASE VIRUS VACCINE
J. J. Leban, H. Kupper, H. G. Bohm, H.-J. Thiel, E. Pfaff, E. Beck, H. Schaller, S. A. Biogen, Geneva, Switzerland; Federal Research Institute for Animal Virus Diseases, Tubingen; Microbiology, University of Heidelberg and ZMBH, Heidelberg, FRG.
- P-MTu-92 SYNTHESIS, VIA THE POLYMERIC REAGENT METHOD, OF A THYMOSIN-LIKE PEPTIDE AS A POTENTIAL IMMUNOSTIMULANT
Michael Mokotoff, Steven M. Roth, Jean A. Shelley, and Joseph N. Slavski *University of Pittsburgh, PA, USA.*
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James E. Zull *Case Western Reserve University, Cleveland, OH, USA.*
- P-MTu-94 PHARMACOLOGICAL POTENCY, BINDING PROPERTIES AND ENZYMATIC DEGRADATION OF CCK $_8$ AND NEW RELATED PEPTIDES
C. Durlieux, B. Charpentier, D. Pelaprat, M. Coppey, I. Menant, G. Gacel and B. P. Roques *U.E.R. des Sciences Pharmaceutiques et Biologiques, Paris, France.*
- P-MTu-95 EVIDENCE FOR A CHOLECYSTOKININ-OCTAPEPTIDE RECEPTOR ON GUINEA PIG TRACHEA
S. Bunting, H. H. Holzgrete, A. E. deVaux, D. J. Staples and T. K. Sawyer *The Upjohn Company, Kalamazoo, MI, USA.*
- P-MTu-96 SYNTHESIS OF KELATORPHAN, A FULL ENKEPHALIN DEGRADING ENZYME INHIBITOR AND OF A TRITIATED PROBE FOR ENKEPHALINASE STUDIES
M. C. Fournie-Zalinski, R. Bouboutou, G. Waksman, R. Besselièvre and B. P. Roques *U.E.R. des Sciences Pharmaceutiques et Biologiques Paris, France.*
- P-MTu-97 SYNTHESIS AND INCORPORATION OF 3-FLUOROAMINO ACIDS INTO PEPTIDES
Simon J. Hocart and David H. Coy *Tulane University Medical School, New Orleans, LA, USA.*
- P-MTu-98 CONFORMATIONALLY RESTRICTED ANALOGUES OF PRO-LEU-GLY-NH $_2$
Kuo Long Yu, Irach Taraporewala, G. Rajakumar, Ram K. Mishra and Rodney L. Johnson *University of Minnesota, MN, USA; McMaster University, Hamilton, Ontario, Canada.*
- P-MTu-99 REVERSIBILITY OF TRYPTIC HYDROLYSIS IN A SERIES OF DISULFIDE LOOP SUBSTRATES
John D. Glass, Irving L. Schwartz, Susan Fairman, Suseanu Fettes, Chandra S. Pande and Angeliki Buku *Mount Sinai School of Medicine, New York, NY, USA.*
- P-MTu-100 ENZYMATIC SYNTHESIS OF ARGININE PROLINE PEPTIDE BODIES USING CLOSTRIPAIN AS A CATALYST
A. J. Andersen *Carlsberg Biotechnology Ltd., Copenhagen, Denmark.*
- P-MTu-101 ENZYMATIC SYNTHESIS OF D-AMINO ACID CONTAINING PEPTIDES
Pia Thorsbek and Fred Widmer *Carlsberg Biotechnology Ltd., Copenhagen, Denmark.*

- P-MTu-102
STRUCTURAL FEATURES OF SYNTHETIC PEPTIDE SUBSTRATES FOR TRANSGLUTAMINASES
J.J. Gorman and **J.E. Folk** GSIRCO ANAPL Geelong Victoria Australia
Enzyme Chemistry Section Bethesda MD USA
- P-MTu-103
HYDROLYZED PEPTIDE DERIVATIVES AS PROTEASE SUBSTRATES AND PRODRUGS
R. Mayer, **M. Pontoni**, **A.C. Roche** and **M. Monsigny** Centre de Biophysique Moléculaire Orléans France
- P-MTu-104
HPLC SEPARATION OF β -ENDORPHIN-(6-17) AND POSSIBLE METABOLITES
P.S.L. Janssen, **J.W. van Nispen**, **P.A.T.A. Meijers** and **R.L.A.E. Hamelink** Organon Int. B.V. The Netherlands
- P-MTu-105
OPIOID RECEPTOR BINDING AFFINITY AND EFFICACY OF METKEPHAMID ANALOGS MODIFIED AT THE PHENYLALANINE RESIDUE
P.D. Geisler, **R.T. Shuman**, **R.C.A. Frederickson**, and **M.D. Hynes** Eli Lilly and Company, Indianapolis, IN, USA
- P-MTu-106
PUTATIVE OPIOID PEPTIDE ANTAGONISTS SYNTHESIS AND BIOLOGICAL PROPERTIES OF D-ALA¹ MET-ENK-AMIDE ANALOGS WITH UNUSUAL TYROSINE RESIDUES
A. Judd, **L. Toll**, **J. Lawson**, **E. Uyeno**, **W. Polgar** and **G. Loew** SRI International, Menlo Park, CA, USA
- P-MTu-107
SYNTHESIS AND ANALGESIC EFFECTS OF TYROSYL-X-PHENYLALANINOL
Misuko Maeda, **Toshiki Tsuji**, **Koichi Kawasaki**, **Joe Watanabe**, and **Hiroshi Kaneto** Kobe-Gakuin University, Nagasaki University, Japan
- P-MTu-108
EFFECTS OF D-AMINO ACID SUBSTITUENTS ON SITES OF LHRH ANALOG CLEAVAGE BY RENAL TISSUE
G. Flouret, **F.A. Carone**, **D.R. Peterson**, **E. Ferronyalka** Northwestern University Medical School, Chicago, IL, USA
- P-MTu-109
SYNTHESIS AND BIOLOGICAL ACTIVITY OF DIMERIC DES-Gly¹⁰[D-Lys⁶]-GnRH-NHEt
Y. Kitejima, **J.P. Chang**, **J.S. Graeter** and **H.C. Chen** NIH, Bethesda, MD, USA
- P-MTu-110
SYNTHESES AND PROPERTIES OF PEPTIDES RELATED TO ATRIAL NATRIURETIC HORMONE
Yoshiaki Kiso, **Masanori Shimokura**, **Satoshi Hosoi**, **Toshio Fujisaki**, **Yoichi Fujiwara** and **Makoto Yoshida** Kyoto Pharmaceutical University, Japan
- P-MTu-111
A NEUROPEPTIDE PROCTOLIN AND ITS NEW ANALOGS
SYNTHESIS AND CARDIOEXCITATORY EFFECT ON INSECTS - PERIPLANETA AMERICANA AND TENEBRIO MOLITOR
D. Konopinska, **W. Sobotka**, **G. Rosinski**, **A. Lesicki**, and **P. Sujak** Institute of Chemistry, Wrocław, Institute of Organic Chemistry, Warszawa, Institute of Zoology, Poznań, Poland
- P-MTu-112
STRUCTURE-ACTIVITY STUDIES ON THE C-TERMINAL HEXAPEPTIDE OF SUBSTANCE P WITH MODIFICATIONS AT THE GLUTAMINYL AND METHIONYL RESIDUES
C. Poulos, **G. Stavropoulos**, **J.R. Brown**, and **C.C. Jordan** University of Patras, Greece, Glaxo Group Research Ltd., Ware, Herts., UK
- P-MTu-113
SECRETIN GLUCAGON HYBRIDS: SYNTHESIS AND BIOLOGICAL ACTIVITY
David Andreu and **Bruce Merrifield** The Rockefeller University New York, NY, USA
- P-MTu-114
THE ISOLATION AND CHARACTERISATION OF MULTIPLE FORMS OF HAEMOPOIETIC GROWTH FACTORS
R.J. Simpson, **E.C. Nice**, **J.A. Hamilton**, **I. Kozka**, **D. McCall** and **A.W. Burgess** Ludwig Institute for Cancer Research, Eliza Hall Institute of Medical Research and University of Melbourne, Victoria, Australia
- P-MTu-115
THE DEGRADATION OF BOMBESIN AND GASTRIN RELEASING PEPTIDE (GRP) BY LIVER AND PLASMA
H. Bachelard, **P. Sirois**, **J. Barabé** and **S.A. St-Pierre** Université de Sherbrooke, Quebec, Canada
- P-MTu-116
PREPARATION OF PORCINE RELAXIN DERIVATIVES SHORTENED AT THE N-TERMINUS OF THE A-CHAIN
Erkka E. Büllesbach, and **C. Schwabe** Medical University of South Carolina, Charleston, SC, USA
- P-MTu-117
IDENTIFICATION AND BIOLOGICAL ACTIVITY OF CHICKEN CALCITONIN I ISOLATED FROM CHICKEN ULTIMOBROCHIAL GLANDS
Tamotsu Homma, **Motoo Watanabe**, **Sachio Hirose**, **Akira Kanai**, **Kenji Kangawa** and **Hisayuki Matsuo** Miyazaki Medical College, Miyake, Miyazaki; Mitsubishi Petrochem Co., Ltd., Ami Inashiki, Japan
- P-MTu-118
STRUCTURE/FUNCTION STUDIES ON HUMAN RELAXIN
Paul D. Johnston, **John Burnier**, **Sharon Chen**, **David Davis**, **Harvard Morehead**, **Melissa Remington**, **Martin Struble**, **Geoffrey Tregear** and **Hugh Niall Genentech, Inc.** South San Francisco, CA, USA; University of Melbourne, Victoria, Australia
- P-MTu-119
SYNTHETIC C-TERMINAL FRAGMENTS OF HUMAN GLYCOPROTEIN-HORMONE ALPHA SUBUNIT USE AS PROBES FOR BIOLOGICAL ACTIVITY
Henry T. Keutmann, **Kathleen B. Mason**, **Teofila Ostrea**, **Kathleen Kitzmann** and **Robert J. Ryan** Massachusetts General Hospital, Boston MA, Mayo Medical School, Rochester, MN, USA
- P-MTu-120
PANCREATIC PREPROSOMATOSTATIN PROCESSING: ISOLATION AND STRUCTURES OF INTERMEDIATES AND FINAL PRODUCTS OF PROCESSING
P.C. Andrews and **J.E. Dixon** Purdue University W Lafayette IN USA
- P-MTu-121
AMINO-TERMINAL FRAGMENTS OF BOVINE PRO-OPIOMELANOCORTIN (POMC): O-GLYCOSYLATION AND CYSTINE BRIDGE ORIENTATION
M.A. Seger and **H.P.J. Bennett** Royal Victoria Hospital McGill University, Montreal, Quebec, Canada
- P-MTu-122
USE OF SYNTHETIC FRAGMENTS TO STUDY ENZYMATIC PROCESSING AND MOLECULAR ORGANIZATION OF NEUROPEPTIDE BIOSYNTHETIC PRECURSORS
R.S. Rapaka, **S. Ando**, **T. Kanmera**, **T.H. Miller** and **T.M. Chalken** NIH Bethesda MD USA

P-MTu-124

RENIN INHIBITORS SUB-NANOMOLAR COMPETITIVE INHIBITORS CONTAINING A NOVEL ANALOG OF STATINE

Joshua Boger, **Linda S. Payne**, Debra S. Perlow, Martin Poe, Edward H. Blaine, Edgar H. Ulim, Terry W. Schorn, Bruce I. LaMont, Mark G. Bock, Robert M. DiPardo, Tsau-Yen Lin, Megumi Kawai, Daniel H. Rich, and Daniel F. Veber, *Merck Sharp & Dohme Research Laboratories, West Point, PA and Rahway, NJ, University of Wisconsin, Madison, WI, USA*

P-MTu-125

TRANSPORT OF AN INTACT NONAPEPTIDE RENIN INHIBITOR ACROSS ADULT JEJUNUM

Kazuo Takaori, Mark Donowitz, **James Burton**, *University Hospital, Boston, MA, USA*

P-MTu-126

SYNTHESIS OF NOVEL TYPE OF PLASMIN INHIBITOR, AMIDE DERIVATIVES OF (N²-ARYLSULFONYL)-L-LYSINE, BLOCKING ACTIVE CENTRE OF THE ENZYME

Yoshio Okada, Yuko Tsuda, Naoki Teno, Takatoshi Naito, Hiroshi Suzuki, Morihiko Yamada, Yumi Seki, and Shosuke Okamoto, *Kobe-Gakuin University, Showa Denko & Co., Ltd., Tokyo; Kobe University School of Medicine, Kobe, Japan*

P-MTu-127

IDENTIFICATION OF GLUCAGON-LIKE PEPTIDE (GLP) SPECIFIC ANTIGENIC DETERMINANTS IN RAT PANCREAS, INTESTINE AND BRAIN

Svetlana Molsov, Linda Epstein and Joel F. Habener, *Massachusetts General Hospital and the Howard Hughes Medical Institute, Boston, MA, USA*

P-MTu-128

INHIBITION OF SUBSTANCE P DEGRADING ACTIVITY FROM RAT BRAIN BY ANALOGS OF THE SUBSTANCE P C-TERMINAL SEQUENCE

R. Laufer, A. Ewenson, E. Rubini, J. Frey, M. Chorev, Z. Selinger, and C. Gilon, *The Hebrew University of Jerusalem, Israel*

P-MTu-129

SYNTHESIS AND SOME PHARMACOLOGICAL PROPERTIES OF VASOPRESSIN ANALOGS MODIFIED IN POSITIONS 2, 4 AND 8

G.K. Toth, B. Penke, F. Laszlo, and K. Kovacs, *Szeged University Medical School, Hungary*

P-MTu-130

STUDIES ON THE GUANOSINE TRIPHOSPHATE BINDING SITE OF RAS PROTEIN BY NMR AND CD SPECTROSCOPY

Chien-Hua Niu, Kyounghoon Han, Peter P. Roller, and Shorri S. Thorgerisson, *National Cancer Institute, National Institutes of Health, Bethesda, MD, USA*

P-MTu-131

MODELLING OF A HYPOTHETIC IONIC BOND IN THE ACTIVE CENTRE OF ACTH BY THE AMIDE BOND: SYNTHESIS AND BIOLOGICAL ACTIVITY OF MODEL COMPOUNDS

P.J. Romanovskis, I.K. Liepkalns, E.A. Porunkевич, M.P. Ratkevica, A.A. Skujins, G.I. Chipens, *Latvian SSR Academy of Sciences, Riga, USSR*

P-MTu-132

STRUCTURAL STUDIES OF CYCLIC DIPEPTIDES CONTAINING TRYPTOPHAN DERIVATIVES

Zenyk Kosarych, Zenon Konteas, James Florance, Charles Martucci, and Alphonse Galdes, *The BOC Group Inc., Murray Hill, NJ, USA*

POSTER SESSION "WTh"

P-WTh-1

THE STRUCTURE OF ARIDICIN A: AN INTEGRATED APPROACH EMPLOYING 2D NMR, ENERGY MINIMISATION AND DISTANCE GEOMETRY CONSTRAINTS FOR THE DERIVATION OF 3-DIMENSIONAL STRUCTURES IN SOLUTION

P.W. Jeffs, L. Mueller, C.W. LeBrosse, S.L. Heald and R. Fisher, *Smith Kline and French Labs, Philadelphia, PA, USA*

P-WTh-2

THE CONFORMATION OF N-ACETYL-N-PHENYLGLYCINE CORRELATION BETWEEN NMR, SINGLE CRYSTAL X-RAY, AND MOLECULAR MECHANICS CALCULATIONS

David E. Portlock, Edward G. Soyke, Jr., Stephen B. Ashton, Thomas P. Demuth Jr., Joel D. Oliver, Lawrence C. Strickland and Fouad S. Ezra, *Norwich Eaton Pharmaceuticals, Inc., Norwich, NY; Proctor & Gamble Co., Cincinnati, OH, USA*

P-WTh-3

CONFORMATIONAL STUDIES OF DERMORPHIN FROM FT-IR, LASER RAMAN, CD, CONFORMATIONAL ENERGY CALCULATIONS AND MOLECULAR MODELING

R.S. Bhatnagar, N. Pattabiraman, K. Sorensen, T.W. Collette, L.A. Carreira, V. Renukopalakrishnan, **R.S. Rapaka**, *University of California, San Francisco, CA; University of Georgia, Athens, GA; Harvard Medical School, Boston, MA; NIDA, Rockville, MD, USA*

P-WTh-4

2D-NMR STUDY OF PRO-PRO SEQUENCES: A PROPOSED NMR CORRELATION CONCERNING THE ψ ANGLE

M.T. Cung, A. Aubry, C. Giessner-Pretre, B. Vitoux and M. Marraud ENSIC-INPL, Nancy, *University of Nancy, Institute of Biological Chemistry, Paris, France*

P-WTh-5

2D-NMR STUDY OF SOMATOSTATIN AND ANALOGUES — SOLVENT EFFECT ON CONFORMATIONAL EQUILIBRIUM

E. Van den Berg, C. Wynants, A. Jans and **G. Van Blinst**, *Vrije University, Brussels, Belgium*

P-WTh-6

ON (S)-5-THIOXOPROLINE (TOP), A NEW MODIFIED AMINO ACID PREPARATION, CRYSTALLOGRAPHIC STRUCTURE, CHEMICAL AND SPECTROSCOPIC PROPERTIES AND SYNTHESIS OF TOP-CONTAINING PEPTIDES

P.B. Rasmussen, T.P. Andersen, I. Thomsen and S.-O. Lawesson, *University of Aarhus, Denmark*

P-WTh-7

SYNTHESIS AND PROPERTIES OF SOME PEPTIDES CONTAINING A BICYCLIC DIPEPTIDE UNIT WITH SEMI-RIGID β -TURN CONFORMATION

Ukon Nagai, Rika Sugawara and Kazuki Sato, *Mitsubishi-Kasei Institute of Life Sciences, Tokyo, Japan*

P-WTh-8

SYNTHESES AND NMR CHARACTERIZATION OF ANALOGS OF DES(126-130) INSULIN, B-24 LEU, B-25 LEU, B-24 SER, AND B-24 D-PHE DPPI, DES (23-63)PROINSULIN

Teresa Kublak, Francis Picart and David Cowburn, *The Rockefeller University, New York, NY, USA*

P-WTh-9

CYCLOPROPYL PHE⁴-ENKEPHALINS

C. Mapelli, H. Kimura, C. Toniolo, G. Newton and **C.H. Stammer**, *University of Georgia, Athens, GA, USA*

- P-WTh-10 INTERPRETATION OF THE MU ACTIVITY OF SEVERAL DERMOPHIN FRAGMENTS IN TERMS OF A NEW RECEPTOR MODEL
A Pastore, T. Tancredi, **P.A. Temussi**, S. Salvadori and R. Tomatis
University of Naples; Istituto Chimica MIB of CNR; University of Ferrara, Italy
- P-WTh-11 SYNTHESIS AND CONFORMATIONAL STUDIES OF ENKEPHALINE-LIKE CYCLIC PEPTIDES AND DEPSIPEPTIDES
H. Kessler, R. Geiger, **C. Zechel**
University of Frankfurt; Frankfurt, West-Germany
- P-WTh-12 NMR AND COMPUTER SIMULATION STUDIES OF A DIASTEREOMERIC PAIR OF CYCLIC ENKEPHALIN ANALOGS
Murray Goodman, Nancy Jenkins Mammì and Moises Hassan
University of California-San Diego, La Jolla, CA, USA
- P-WTh-13 CONFORMATION AND DESIGN OF CYCLIC SOMATOSTATIN ANALOGUES WITH HIGH AFFINITY FOR μ -OPIATE RECEPTORS
John T. Pelton, Wayne L. Cody, Victor J. Hruby, Karoly Gulya and Henry I. Yamamura
University of Arizona, Tucson, AZ, USA
- P-WTh-14 CONFORMATIONAL ANALYSIS OF A CYCLIC LH-RH ANTAGONIST BY TWO-DIMENSIONAL VERY HIGH FIELD PROTON NMR
E.L. Baniak, L.M. Gierasch, A.T. Hagler, J. Rivier, T. Solmajer and R.S. Struthers
University of Delaware, Newark, DE; The Salk Institute, La Jolla, The Agouron Institute, La Jolla, CA, USA
- P-WTh-15 PREDICTIVE CONFORMATIONAL ANALYSIS OF ATRIAL NATRIURETIC FACTOR (CARDIONATIN)
T.G. Flynn and D.F. Weaver
Queen's University, Kingston, Ontario, Canada
- P-WTh-16 A NEW TECHNIQUE FOR THE DETERMINATION OF BIOLOGICALLY ACTIVE CONFORMATIONS OF PEPTIDES BOUND TO PROTEINS
N.R. Nirmala, **K. Hallenge**, L.R. Brown, P. Hill and V.J. Hruby
Michigan State University, East Lansing, MI; Michigan Molecular Institute, Midland, MI; University of Arizona, Tucson, AZ, USA
- P-WTh-17 DETERMINATION OF STATISTICAL WEIGHTS FOR OLIGOPEPTIDE CONFORMERS IN SOLUTION
G.V. Nikiforovich, B.G. Vesterman, I. Sekacis, J. Betins, L. Podins
Latvian SSR Academy of Sciences, Riga, USSR
- P-WTh-18 FOLDED, HELICAL AND EXTENDED STRUCTURES OF PEPTIDES FROM α -DIALKYLATED α -AMINO ACIDS. SOLID-STATE AND SOLUTION CONFORMATIONS OF HOMO-OLIGOPEPTIDES FROM α -DIETHYLGLYCINE
A. Bavoso, **E. Benedetti**, B. Di Blasio, V. Pavone, C. Pedone, C. Toniolo, G.M. Bonoira, M.T. Lepawy, A. Redlinski and K. Kaczmarek
University of Padua, Italy; Technical University, Lodz, Poland
- P-WTh-19 SEQUENTIAL POLYPEPTIDES AS HISTONE MODELS AND THEIR COMPLEXES WITH DNA. SYNTHESIS AND CONFORMATIONAL STUDIES
E. Panou-Pomonis, **C. Sakarellos** and M. Sakarellos-Daitsiotis
University of Ioannina, Greece
- P-WTh-20 SYNTHESIS AND PROPERTIES OF SYNDIOTACTIC CYCLIC PEPTIDES CONTAINING ALPHA-AMINO FATTY ACIDS
Norikazu Nishino, Munetaka Ishiyama and Tsutomu Fujimoto
Kyushu Institute of Technology, Tobata-ku, Japan
- P-WTh-21 PROTON NMR ASSIGNMENTS AND SOLUTION CONFORMATION FEATURES OF THYMULIN
J.B. Vaughn, Jr
The Rockefeller University, New York, NY, USA
- P-WTh-22 ^1H -NMR STUDIES OF THE EPIDERMAL GROWTH FACTOR (EGF) IN NORMAL AND REVERSE MICELLES
Antonio De Marco, Enea Menegatti and Mario Guarneri
Istituto Chimica Macromolecole CNR, Milano; University of Ferrara, Ferrara, Italy
- P-WTh-23 SYNTHESIS OF AN ARGININE-RICH RNA-BINDING FRAGMENT OF A VIRAL PROTEIN
Paul B.W. Ten Kortenaar, Jaap Kruse, Marcus A. Hemminga and Godelfridus I. Tesser
Catholic University, Nijmegen; Agricultural University, Wageningen, The Netherlands
- P-WTh-24 ISOLATION AND $2\text{D } ^1\text{H}$ NMR OF THE NH_2 -TERMINAL 24 RESIDUES PEPTIDE FRAGMENT FROM DOG SERUM ALBUMIN (DSA) AND ITS COMPLEXATION WITH COPPER AND NICKEL
B. Decock-Le Reverend, B. Perly and B. Sarkar
Université des Sciences et Techniques de Lille, Cedex; Centre d'études nucléaires de Saclay IRI/IDPG, France; The Hospital for Sick Children, Toronto; University of Toronto, Ontario, Canada
- P-WTh-25 CIRCULAR DICHROISM, 2D-NMR AND BIOLOGICAL ACTIVITY OF THE DODECAPEPTIDE α -FACTOR FROM *SACCHAROMYCES CEREVISIAE*
Fred Nalder, Ponniah Shenbagamurthi, Michelle S. Broido, Linda Hughes, Susan Rath and Jeffrey M. Becker
C.U.N.Y., Staten Island, NY; University of Tennessee, Knoxville, TN, USA
- P-WTh-26 NEW APPROACHES TO AROMATIC SIDE-CHAIN CONFORMATION USING TIME-RESOLVED FLUORESCENCE SPECTROSCOPY
H.R. Wyssbrod, W.R. Laws and J.B.A. Ross
Mount Sinai School of Medicine, New York, NY, USA
- P-WTh-27 PATTERNS IN AMPHIPHILIC HELICAL SEQUENCES
Peter V. Pallal and Robert M. Abarbanel
Research Institute of Scripps Clinic, La Jolla, CA; Intelligenetics, Inc., Palo Alto, CA, USA
- P-WTh-28 HELIX STABILIZATION IN ANALOGS OF RIBONUCLEASE A (1-13)
Eunice J. York, John M. Stewart, Robert L. Baldwin and Kevin R. Shoemaker
University of Colorado School of Medicine, Denver, CO; Stanford University Medical Center, CA, USA
- P-WTh-29 SYNTHESIS, CHARACTERIZATION AND BLM STUDIES OF L-ALA 7 -GRAMICIDIN A ANALOG
Karl U. Prasad, S. Alonso-Romanowski, Tina L. Trapani, C.M. Venkatachalam and Dan W. Urry
University of Alabama Medical Center, Birmingham, AL, USA
- P-WTh-30 STUDY OF THE LIPID-BINDING DOMAIN OF PHOSPHOLIPASE A_2 USING SEMISYNTHESIS AND CHEMICAL MODIFICATION
Arend J. Sligboom, **Gustaaf J.M. van Scharrenburg**, Frans van der Wiele, Wim Altsma and Gerard H. de Haas
State University of Utrecht, The Netherlands
- P-WTh-31 DESIGN OF A MEMBRANE-ANCHORING PEPTIDE AND ITS SYNTHESIS, PURIFICATION, AND PHYSICAL CHARACTERIZATION
Heather K.B. Simmerman, Thomas E. Thompson and Frank R.N. Guid
University of Virginia School of Medicine, Charlottesville, VA, USA

- P-WTh-32 DESIGN AND CHARACTERIZATION OF A MODEL PEPTIDE TESTING THE STRUCTURAL REQUIREMENT FOR THE HYDROPHILIC SPACER REGION IN β -ENDORPHIN
B. Rajashekhar and **E. T. Kaiser** *The Rockefeller University, New York, NY, USA*
- P-WTh-33 SPECTRAL STUDIES OF BACTERIORHODOPSIN FRAGMENTS IN MEMBRANE
A. T. Kozhich, **S. V. Sychev**, **L. D. Tchikin**, **E. N. Dudoladova** *Shemyakin Institute of Bioorganic Chemistry, USSR Academy of Sciences, Moscow, USSR*
- P-WTh-34 SOLID PHASE PEPTIDE SYNTHESIS OF (NLE-27)-OXYNTOMODULIN AND PRELIMINARY EVALUATION OF ITS BIOLOGICAL ACTIVITIES
M. P. Audoussert-Puech, **A. Kervran**, **F. Mercier**, **M. Dufour**, **B. Castro**, **B. Bataille**, and **J. Martinez** *CNRS-INSERM, Montpellier, France*
- P-WTh-35 TYROSINE SPECIFIC PROTEIN KINASE INHIBITOR SYNTHESIS OF PEPTIDE SUBSTRATE INHIBITORS
James P. Tam, **Noritake Asato** and **Nicholas F. Pileggi** *The Rockefeller University, New York, NY, USA*
- P-WTh-36 EFFECTS OF THE PEPTIDE BOND RETRO-INVERSION ON THE BIOLOGICAL ACTIVITY OF BRADYKININ POTENTIATING PEPTIDE 5a (BPP5a) ANALOGUES
A. Groggia, **A. Pessi**, **A. Sisto**, **A. S. Verdini**, **G. C. Visconti** and **A. Viridia** *Enricerche, S.p.A., Monterotondo, Roma, Italy*
- P-WTh-37 RENIN INHIBITORS. SYNTHESIS AND BIOLOGICAL ACTIVITY OF STATINE-CONTAINING PEPTIDES HAVING POLAR END GROUPS
Mark G. Bock, **Robert M. DiPardo**, **Ben E. Evans**, **Roger M. Freidinger**, **W. L. Whittier**, **Linda S. Payne**, **Joshua S. Boger**, **Edgar H. Ulm**, **Martin Poe**, **Edward H. Blaine** and **Daniel F. Veber** *Merck, Sharp, and Dohme, West Point, PA, USA*
- P-WTh-38 RENIN INHIBITION BY NEW CONFORMATIONALLY RESTRICTED ANALOGS OF RENIN SUBSTRATE
C. R. Nakale, **M. C. F. Oliveira**, **L. Juliano** and **A. C. M. Paiva** *Escola Paulista de Medicina, Sao Paulo, Brazil*
- P-WTh-39 X-RAY ANALYSIS OF RENIN INHIBITOR: Leu-Leu-Stat-Ala-Stat
C. Courseille, **G. Geofre**, **E. Ouyard** and **G. Precigoux** *Universite de Bordeaux, Talence, France*
- P-WTh-40 THE USE OF THEORETICAL ENERGY CALCULATIONS IN THE ANALYSIS OF THE THREE DIMENSIONAL STRUCTURE OF HUMAN RENIN AND INHIBITORS BOUND TO ITS ACTIVE SITE
William Carlson, **Mark Handschumacher**, **Neena Summers**, **Martin Karplus** and **Edgar Haber** *Massachusetts General Hospital, Boston, MA, USA*
- P-WTh-41 NOVEL INHIBITORS OF RENIN
D. M. Jones, **J. Suerias-Diaz** and **M. Szelke** *Royal Postgraduate Medical School, London, England*
- P-WTh-42 SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF KETO-METHYLENE PSEUDEPTIDE ANALOGS RELATED TO THE C-TERMINAL HEXAPEPTIDE OF SUBSTANCE P
A. Ewenson, **R. Cohen**, **D. Levian**, **Teitelbaum**, **M. Choren**, **R. Laufer**, **Z. Seelinger** and **C. Gilon** *The Hebrew University of Jerusalem, Israel*
- P-WTh-43 KETOMETHYLDIPEPTIDES - A NEW CLASS OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS
S. Natarajan, **E. M. Gordon**, **E. F. Sabo**, **J. D. Godfrey**, **H. N. Weller**, **J. Pluscec**, **M. B. Rom**, **D. W. Cushman**, **J. M. DeForrest** and **J. R. Powell** *The Squibb Institute for Medical Research, Princeton, NJ, USA*
- P-WTh-44 DESIGN OF TRIPEPTIDE DERIVED INHIBITORS OF ANGIOTENSIN CONVERTING ENZYME STUDIES ON THE ROLE OF THE N-BENZAMIDO SUBSTITUENT
E. M. Gordon, **J. D. Godfrey**, **H. N. Weller**, **Jelka Pluscec**, **M. B. Rom**, **K. Niemeia**, **S. Natarajan**, **E. F. Sabo**, and **D. W. Cushman** *The Squibb Institute for Medical Research, Princeton, NJ, USA*
- P-WTh-45 SMALL SUBSTRATE ANALOG INHIBITORS OF BACTERIAL IgA PROTEASES
James Burton, **Andrew G. Plaut**, **Joanne Gilbert** *University Hospital, Boston, MA, USA*
- P-WTh-46 SYNTHESIS OF SULFUR CONTAINING ANALOGS OF BESTATIN
Timothy D. Ocalin, and **Daniel H. Rich** *University of Wisconsin, Madison, WI, USA*
- P-WTh-47 KETOMETHYLENE TRYPSIN INHIBITORS AS PROBES OF SERINE PROTEINASES
John S. McMurray and **Douglas F. Dyckes** *University of Houston, Houston, TX, USA*
- P-WTh-48 SOLID PHASE SYNTHESIS OF TRYPSIN INHIBITORS CMTH I AND CMTH III FROM SQUASH SEEDS/CUCURBITA MAXIMA
Gotfryd Kupryszewski, **Ulf Ragnarsson**, **Krzysztof Rolka**, **Tadeusz Wilusz** and **Antoni Polanowski** *University of Gdansk, Gdansk, Poland; University of Uppsala, Uppsala, Sweden; University of Wroclaw, Wroclaw, Poland*
- P-WTh-49 INCORPORATION OF COORDINATING AMIDE BOND SURROGATES WITHIN MAMMALIAN COLLAGENASE INHIBITORS
Robert B. Miller, **Arno F. Spatola**, and **Robert D. Gray** *University of Louisville, Louisville, KY, USA*
- P-WTh-50 INHIBITION OF HUMAN LEUKOCYTE ELASTASE, PORCINE PANCREATIC ELASTASE AND CATHEPSIN G BY PEPTIDE KETONES
Hiroshi Hori, **Akira Yasutake**, **Yoshihiro Minematsu** and **James C. Powers** *Georgia Institute of Technology, Atlanta, GA, USA*
- P-WTh-51 NMR STUDIES OF SCORPION NEUROTOXINS
D. Nettekheim, **C. E. Bugg**, **N. R. Krishna**, **D. D. Watt** *University of Alabama at Birmingham, Birmingham, AL; Creighton University, Omaha, NB, USA*
- P-WTh-52 CHEMICAL SYNTHESIS OF HEAT-STABLE ENTEROTOXINS PRODUCED BY ENTERIC BACTERIA - STRUCTURE AND BIOLOGICAL ACTIVITY
S. Almoto, **S. Yoshimura**, **Y. Hidaka**, **H. Ikemura**, **Y. Shimomishi**, **T. Takeda**, **M. Arita**, **T. Miwatani**, and **Y. Takeda** *Osaka University, Osaka, University of Tokyo, Minato-ku, Japan*
- P-WTh-53 NEW LYTIC PEPTIDES IN INSECT VENOMS AND FROG SKIN
J. J. Pisano, **R. Horikawa** and **A. Argolas** *NIH, Bethesda, MD, USA*
- P-WTh-54 MOLECULAR MECHANISM OF HEMOLYSIS OF HUMAN ERYTHROCYTES BY SNAKE VENOM CARDIOTOXIN (A MEMBRANE-DISRUPTIVE POLYPEPTIDE)
Yee-Hsiung Chen *Academia Sinica, Taipei, Taiwan Republic of China*

- P-WTh-55 PHOTOACTIVABLE APAMIN DERIVATIVES AS K⁺ CHANNEL PROBES
C. Labbe-Julie, M. Seagar, C. Granier, F. Couraud, and J. Van Rietschoten. *Faculté de Médecine Secteur Nord Marseille, France*
- P-WTh-56 DETERMINATION OF PICOMOLE LEVELS OF NEUROTENSIN, BOMBESIN AND RELATED PEPTIDE FRAGMENTS USING GRADIENT ELUTION HIGH PERFORMANCE LIQUID CHROMATOGRAPHY COUPLED WITH ELECTROCHEMICAL DETECTION
Andrea L. Drumheller, Helene Bachelard, Robert Rivest, Serge St-Pierre and Francois B. Jolicoeur. *Université de Sherbrooke, Sherbrooke, Quebec, Canada*
- P-WTh-57 FACILITATED FORMATION OF UNSYMMETRICAL DISULFIDE BONDS VIA THE S-(3-NITRO-2-PYRIDINESULFENYL)-DERIVATIVE OF CYSTEINE
Michael S. Bernatowicz, Rei Matsueda, and Gary R. Matsueda. *Sankyo Chemical Co., Tokyo, Japan, Harvard Medical School, Boston, MA, USA*
- P-WTh-58 SOLID-PHASE SYNTHESIS OF PHOSPHOPEPTIDES: SYNTHESIS OF PEPTIDE ANALOGS FROM THE CARBOXYL-TERMINUS OF RHODOPSIN
Anatol Arendt, J. Hugh McDowell, and Paul A. Hargrave. *Southern Illinois University, Carbondale, IL, USA*
- P-WTh-59 A NEW SIMPLE, AND CONVENIENT SYNTHESIS OF [Leu⁵]-ENKEPHALIN AMENABLE TO LARGE SCALE PRODUCTION
Kripa S.L. Srivastava, Charles M. Groginsky and Ronald D. Jasensky. *Vega Biotechnologies, Inc., Tucson, AZ, USA*
- P-WTh-60 SYNTHESIS OF A BASE LABILE 9-(AMINOACYLONXYMETHYL)-FLUORENE-4-CARBOXYAMIDOMETHYL RESIN (I) AND ITS APPLICATION IN THE PREPARATION OF HUMAN ANGIOTENSIN II AND ATRIOPEPTIN (1-22) FRAGMENT
Foe S. Tjoeng, Mark Zupiec, Shad Eubanks and Steven P. Adams. *Monsanto Co., St. Louis, MO, USA*
- P-WTh-61 EFFICIENCY OF SOLID PHASE SYNTHESIS USING AN AUTOMATED FLOW REACTOR: A COMPARISON STUDY
Yin-Zeng Liu and Johannes Meienhofer. *Hoffmann-La Roche Inc., Nutley, NJ, USA*
- P-WTh-62 BB₁-CF₃COOH AS PEPTIDE RESIN DEBLOCKING AGENT — OPTIMAL CONDITION STUDIES
K.T. Wang, and Y.S. Tseng. *Academia Sinica, Taipei, Taiwan, Republic of China*
- P-WTh-63 PEPTIDE CYCLIZATIONS ON POLYSTYRENE SUPPORTS: A STUDY OF INTRASITE AND INTERSITE REACTIONS
A.R. Mitchell and R.B. Merrifield. *The Rockefeller University, New York, NY, USA*
- P-WTh-64 SYNTHESIS OF TRITIUM LABELLED GASTRIN C-TERMINAL PEPTIDES
P.V.C. Pham, M. Ponchant, C. Mendre, TH. Lam, M. Dubrasquet, J.L. Morgat and P. Fromageot. *CEN de Saclay, France*
- P-WTh-65 NOVEL ANALOGUES OF LULIBERIN (LH-RH)
V.S. Chauhan and A.K. Sharma. *University of Delhi, Delhi, India*
- P-WTh-66 IDENTIFICATION OF IMPURITIES AND SIDE REACTIONS IN THE SYNTHESIS OF ATRIAL NATRIURETIC FACTOR (ANF) USING PREPARATIVE HPLC AND FAB/MS
Terry A. Lyle, Terry M. Ciccarone, Carl F. Hornick, Jack L. Smith and Ruth F. Nutt. *Merck Sharp & Dohme Research Laboratories, West Point, PA, USA*
- P-WTh-67 SYNTHESIS OF SULFATED CHOLECYSTOKININ OCTAPEPTIDE WHEREIN ALL SYNTHETIC STEPS ARE PERFORMED ON A SOLID MATRIX
James D. Rosamond and Jeanne Comstock. *Pennwalt Pharmaceutical, Rochester, NY, USA*
- P-WTh-68 A CONVENIENT METHOD FOR SYNTHESIS, PURIFICATION AND CONJUGATION OF SYNTHETIC PEPTIDE ANTIGENS
H.R. Wolfe, Jr. and W.F. DeGrado. *E.I. du Pont de Nemours & Co., Wilmington, DE, USA*
- P-WTh-69 SYNTHESIS AND BIOLOGICAL ACTIVITIES OF HUMAN PLASMA APOLIPOPROTEIN C-II PEPTIDES
A. Balasubramaniam, R.F. Murphy, R.A. Demel and R.L. Jackson. *University of Cincinnati Medical Center, Cincinnati, OH, USA, The State University of Utrecht, Netherlands*
- P-WTh-70 SOLID PHASE SYNTHESIS OF THYMOSIN β_4 USING THE IMPROVED HF DEPROTECTION METHOD
N. Chandramouli, K. Bhargava and R.B. Merrifield. *The Rockefeller University, New York, NY, USA*
- P-WTh-71 SOLID PHASE SYNTHESIS OF HUMAN PLASMA APOLIPOPROTEIN C-II AND SOME OF ITS FRAGMENT PEPTIDES
Fairwell Thomas, A.V. Hospattankar and S.A. Khan. *National Heart, Lung, and Blood Institute, Bethesda, MD; The Rockefeller University, New York, NY, USA*
- P-WTh-72 SYNTHESIS OF GASTRIN-17, CAERULEIN AND CCK-8 WITH THE STANDARD MERRIFIELD AND THE "LOW-HIGH HF" PROCEDURES
B. Penke, M. Zarandi, J. Varga, J. Zsigo, J. Rivier and K. Kovacs. *Szeged University Medical School, Szeged, Hungary*
- P-WTh-73 SYNTHESIS OF A DECAPEPTIDE CORRESPONDING TO ANTIGENIC SITE III OF RABIES VIRUS GLYCOPROTEIN
Didier Blanot, Patrice Coulon, Jean van Heijenoort and Anne Fiamand. *Université de Paris-Sud, Laboratoire de Génétique des Virus, Gif-Sur-Yvette, France*
- P-WTh-74 HUMAN T-CELL LEUKEMIA VIRUS STRUCTURAL PROTEINS SYNTHETIC FRAGMENTS AND THEIR ANTIBODIES IDENTIFY ANTIGENIC SITES
T.D. Copeland, W.P. Tsai, Y.D. Kim and S. Oroszlan. *NCI-Frederick Cancer Research Facility, Frederick, MD, USA*
- P-WTh-75 THE C-TERMINAL HOMOCYSTEINE THIOLACTONE AS A PRECURSOR FOR THE SYNTHESIS OF IMMUNOGENS APPLICATION TO THE TACHYKININS
Solange Lavielle, Gerard Chassaing, Sylviane Julien and Andree Marquet. *Université P et M Curie, Paris, France*
- P-WTh-76 THE IDENTIFICATION OF ANTIGENIC DETERMINANTS IN PROTEINS BY THE ANALYSIS OF PEPTIDES FROM PROTEOLYSED ANTIGEN-ANTIBODY COMPLEXES
Ronald Jemmerson and Yvonne Paterson. *Scruggs Clinic and Research Foundation, La Jolla, CA, USA*

- P-WTh 88
PREDICTION AND SYNTHESIS OF POTENTIAL ACTIVE SITES OF SOME IMMUNOREGULATORY PROTEINS AND PEPTIDES
G. Chipens N. Ievina, O. Papsuevich, T. Petrova, G. Rosenthal, R. Vagner, I. Rituma. *Institute of Organic Synthesis, Riga, USSR*
- P-WTh 89
RECEPTORS FOR TUFTSIN ON PLASMA MEMBRANES OF MACROPHAGES AND MACROPHAGE HYBRIDOMA CELLS
M. Fridkin S. Dagan, E. Tzehoval and M. Feldman. *The Weizmann Institute of Science, Rehovot, Israel*
- P-WTh 90
STRUCTURAL REQUIREMENTS FOR THE BIOLOGICAL ACTIVITY OF THYMOPENTIN ANALOGS
Daniel Kroon, Tapan Audhya, Gideon Goldstein, and **George A. Heavner**. *Ortho Pharmaceuticals Corporation, Raritan, NJ, USA*
- P-WTh 91
IDENTIFICATION OF IMMUNODOMINANT SITES ON C-TERMINAL REGIONS OF CYTOCHROME C BY USING SYNTHETIC PEPTIDES
Bhagirath Singh, Patrick D. Kilgannon and Ester Fraga. *University of Alberta, Edmonton, Alta, Canada*
- P-WTh 92
SYNTHESIS AND PHARMACOLOGY OF DI-PEPTIDES RELATED TO DES[GLY²] ENKEPHALIN. MODIFICATION OF THE C-TERMINAL AMIDE
J. Singh B. A. Morgan and S. J. Ward. *Sterling-Winthrop Research Institute, Rensselaer, NY, USA*
- P-WTh 93
CARBOXY-TERMINUS OF α -MELANOTROPIN. STRUCTURAL DETERMINANTS IMPORTANT FOR POTENCY VERSUS INTRINSIC BIOACTIVITY
D. J. Staples A. E. de Vaux, J. A. Altholter, T. K. Sawyer, P. S. Darman, W. L. Cuddy, B. C. Wilkes, V. J. Hruby, M. F. Engel, and M. E. Hadley. *The Upjohn Company, Kalamazoo, MI, University of Arizona, Tucson, AZ, University of Oklahoma, Norman, OK, USA*
- P-WTh 94
MUTATION AND DESIGN OF INTERMOLECULAR RECOGNITION IN MODEL SEMISYNTHETIC RIBONUCLEASE
Xun Liang and Irwin M. Chaiken. *Nankai University, People's Republic of China, National Institutes of Health, Bethesda, MD, USA*
- P-WTh 95
ENZYME-CATALYZED PEPTIDE SYNTHESIS AT PHENYLALANINE (B25) OF INSULIN WITH DIFFERENT ENZYMES
Hans-Gregor Galtner. *Deutsches Wollforschungsinstitut, Aachen, FRG*
- P-WTh 96
INSULIN ANALOGUES BEARING UNNATURAL AROMATIC AMINO ACID SUBSTITUTIONS AT POSITION B25
S.H. Nakagawa M. J. Sheetz and H. S. Tager. *The University of Chicago, IL, USA*
- P-WTh 97
SEMISYNTHETIC INSULIN ANALOGS. SUBSTITUTION FOR GLY-B23 SIGNIFICANTLY ALTERS THE ACTIVITY OF DESTETRAPEPTIDE-INSULIN
Mark W. Riemen, John T. Hosoume, Nancy A. Hillyard, Michael P. Allen and Frederick H. Carpenter. *University of California, Berkeley, CA, USA*
- P-WTh 98
PEPTIDE DEGRADATION. BIOLOGICAL HALF-LIVES AND FRAGMENTATION PATTERNS FOR CCK OCTAPEPTIDE AND ENKEPHALINS IN HUMAN SERUM AND KIDNEY HOMOGENATES
Arno F. Spatola and Deanne E. Behowitz. *University of Louisville, KY, USA*
- P-WTh 88
SYNTHESIS AND BIOLOGICAL EVALUATION OF PEPTIDE E-10 ALA¹PEPTIDE E AND CARBOXY-TERMINUS FRAGMENTS
E.P. Helmer, A.M. Felix, M. Ahmad, T.J. Lambros, S. Spector, D.M. Helmesle and C.H. Li. *Hoffmann-La Roche Inc., Nutley, NJ, Roche Institute of Molecular Biology, Nutley, NJ, University of CA, San Francisco, CA, USA*
- P-WTh 89
ENKEPHALIN TRIPEPTIDE AMIDES
D. Sarantakis, H. Fletcher III, R. Tasse and W. Dvornich. *Wyeth Labs Inc, Philadelphia, PA, USA*
- P-WTh 90
SYNTHESIS AND BIOLOGICAL ACTIVITY OF A POTENT ENKEPHALIN ANALOG, Tyr-DThr-Gly-Phe- Δ^3 Pro-NH₂
Chrysa Tzougraki, Wallace M. Dairman, Raymond C. Makofske, Lislot Aeppli and Johannes Meienholder. *University of Athens, Greece, Roche Research Center, Nutley, NJ, USA, Hoffmann-La Roche & Co., Ltd., Basel, Switzerland*
- P-WTh 91
URINARY METABOLITES OF NAFARELIN, A SUPERAGONISTIC ANALOGUE OF LHRH, IN MONKEYS
R.L. Chan and M.D. Chaplin. *Syntex Research, Palo Alto, CA, USA*
- P-WTh 92
POTENT LHRH AGONISTS CONTAINING N⁶-N^{6'}-DIALKYL-D-HOMOARGININES
J.J. Nestor, Jr., R. Tahilramani, T.L. Ho, G. I. McRae and B.H. Vickery. *Syntex Research, Palo Alto, CA, USA*
- P-WTh 93
SUBSTITUTION OF ARG³ FOR TYR³ IN GnRH ANTAGONISTS
R.W. Roesske, N. Chaturvedi, J. Rivier, W. Vale, J. Porter and M. Perrin. *Indiana University School of Medicine, Indianapolis, IN, The Salk Institute, San Diego, CA, USA*
- P-WTh 94
SYNTHESIS AND CARDIOVASCULAR ACTIVITY OF IMIDAZOLE SUBSTITUTED ANALOGUES OF TRH
Virender M. Labroo, Giora Feuerstein and Louis A. Cohen. *National Institutes of Health, Bethesda, MD, Uniformed Services University of the Health Sciences, Bethesda, MD, USA*
- P-WTh 95
SOLID PHASE SYNTHESIS AND BIOLOGICAL ACTIVITY OF FRAGMENTS OF hCRF
J.L. Morell, J.H. Brown, C.W. Grewe, G. Aguilera and K. J. Catt. *NIH, Bethesda, MD, USA*
- P-WTh 96
SINGLE AMINO ACID DELETION ANALOGS OF HUMAN GROWTH HORMONE RELEASING FACTOR
T. Munegumi, A. Baur, W.B. Wehrenberg, N. Ueno, and N. Ling. *The Salk Institute, San Diego, CA, USA*
- P-WTh 97
STRUCTURE-ACTIVITY STUDIES ON ATRIOPEPTINS
K. Fok, F.S. Tjeng, J. Houbion, K. Spear, S.T. Nugent, S.R. Eubanks, M.E. Zupiec, G. Olins, D. Blehm, K. Wakatani, P. Needleman and S.P. Adams. *Monsanto Co., Washington University Medical School, St. Louis, MO, USA*
- P-WTh 98
ISOLATION OF CARDIODILATIN (CDD 1-126), THE COMPLETE GENE PRODUCT OF AN ATRIAL PEPTIDE HORMONE
W.G. Forsmann, D. Hock, C. Kuhn, J. Metz, C. Birn, M. Carlquist and V. Mull. *University of Heidelberg (FHG), Heidelberg, FRG, Karolinska University, Stockholm, Sweden*

P-ATN-99	STRUCTURE ACTIVITY STUDIES OF HUMAN ANTHAL NATIONOL POLYPEPTIDES (HNP) Panyoshi Chino, Yoji Nishio, Yuji Nakai, Takashi A. Matsuda, Terutoshi Kimura , and Shouichi Sakakita, <i>Osaka University Research Center, Osaka, Japan</i>
P-ATN-10A	ATRIAL NATRIURETIC FACTORS, THE FINE POLYAMIDE SIDE CHAIN PHASE SYNTHESIS AND BIOACTIVITY OF RAT AND HUMAN Atrial Natruectic 10, 33 and 63 PEPTIDES J.D. Wade , M. McDonald, J.G. McDougall, D.B. Suckling, and G.W. Tregear, <i>University of Melbourne, Victoria, Australia</i>
P-ATN-10B	OXYTOCIN ANALOGS WITH OXYGEN CONTAINING SIDE CHAINS IN POSITION 3 Diana Gazis , Irving L. Schwartz, Paul Cordopatis, and Dimitrios Theodoropoulos, Mount Sinai School of Medicine, New York, NY, USA <i>University of Patras, Patras, Greece</i>
P-ATN-10C	NEW SUBSTANCE P ANALOGUES, ALGINISTS AND ANTANALGICS SUITABLE FOR LABELLING G. Drapeau , E. Escher, P. Dorleans, Juste's Dior and J. Bergeron, <i>University of Sherbrooke, Sherbrooke, Quebec, Canada</i>
P-ATN-10D	NEUROMEDINS NOVEL NEUROPEPTIDES IDENTIFIED FROM SPINAL CORD Naoto Minamino , Tetsuji Sudoh, Kenji Kangawa, and Hiroaki Mori, Miyazaki Medical College, Miyazaki, Japan
P-ATN-10E	STRUCTURE ACTIVITY STUDIES OF NEURON-PERMEABLE VESSEL CONSTRUCTION IN PERFUSED CORRELATION E. Munekata , F. Osakada, K. Kubota, and T. Yamazaki, <i>Osaka Dental University of Tsukuba, Tsukuba, Japan; Miyazaki Medical College, Miyazaki, Japan</i>
P-ATN-10F	STRUCTURE ACTIVITY STUDIES ON NPV REGION OF VESSEL VESSEL CONSTRUCTION IN PERFUSED CORRELATION J.C. Martel , H. Bachelard, S.A. St Pierre, and G. Rioux, <i>Sherbrooke Institute National de Recherche en Neurologie et Psychiatrie, Quebec, Canada</i>
P-ATN-10G	EFFECTS OF NATURAL AND SYNTHETIC PEPTIDES ON NEURONS M.K. Rock , S.B. Shapiro, J.E. Blumstein, and C.H. Schleisinger , <i>University of Texas Medical Branch at Galveston, Galveston, TX, USA</i>
P-ATN-10H	SYNTHESIS AND AMRESIA HEPTACETYL PEPTIDES, FMRFamide AND TRIPLETTES RELATED TO THE TERMINAL PEPTIDES OF OXYTOCIN Francis J. Tinney , W. Howard Hudak, and Ernest L. Peck, <i>University of Davis, Ronald E. Voigman, and John G. Marshall, Washington Lambert Park, Davis, Pharmacology Research, Ames, IA, USA</i>
P-ATN-10I	VASOPRESSIN ANTAGONIST ANALOGS CONTAINING ALPHA METHYL AMINO ACIDS AT POSITION 4 William F. Hoffman , Garland R. Marshall, Michael L. Moore, William M. Bryan, Joanne S. Silvestri, Hsin-Lan Chang, Franks L. Slusser, Karen Stefankiewicz, Lynn Sulat, Lewis B. Kohler, Jeanette E. McLaughlin, Larry Shue, and Duane Schmidt, <i>Smith-Kline & French Labs, Philadelphia, PA, Washington University School of Medicine at Louis, MO, USA</i>

P-WTh-119

THE SYNTHESIS AND STRUCTURE ACTIVITY STUDIES OF VASO PRESSIN ANTAGONISTS MODIFIED AT POSITIONS ONE AND TWO

Nelson C.F. Yim, Fadia E. Ali, William Bryan, William F. Huffman, Michael L. Moore, Joanne Silvestri, and Su-Sun Wang, R. Erickson, G. Heckman, L. Kinter, J. McDonald, D. Schmidt, D. Shue, F. Slassen, J. Stefankiewicz and L. Sulat *Smith Kline & French Laboratories, Philadelphia, PA, Alpha Biomedicals, Inc., San Carlos, CA, USA*

P-WTh-120

BENZYLOXYCARBONYLCARBONYL- AND p-NITROBENZYL- OXY-CARBONYLCARBONYL GROUPS AS AMINE PROTECTION AND CHROMATOGRAPHIC HANDLES DURING PEPTIDE SYNTHESIS
John D. Glass, Angeliki Buku, Uma Roy, Diana Gazis, and Brian Hayes *Mount Sinai School of Medicine, New York, NY, USA*

P-WTh-121

STATINE-CONTAINING RENIN INHIBITORY PEPTIDES, EFFECTS ON BLOOD PRESSURE IN THE PRIMATE
Kwan Y. Hui, Michael S. Bernatowicz, H. Hartley, and Edgar Haber *Massachusetts General Hospital, Boston, MA, USA*

P-WTh-122

SYNTHESIS OF BIOLOGICALLY ACTIVE PEPTIDES ON A NOVEL AUTOMATED PEPTIDE SYNTHESIZER
S. Meister, T. Geiser, and **S. Kent** *Applied Biosystems, Inc., Foster City, CA; California Institute of Technology, Pasadena, CA, USA*

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2-87

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